

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2393.—VOL. LI.

LONDON, SATURDAY, JULY 2, 1881.

PRICE (WITH THE JOURNAL) SIXPENCE
PER ANNUM, BY POST, £1 4s.

Our "Patent Steelyard" is extensively used by Foreign Railway Companies and Merchants. It indicates the weight in any NATIONAL

WEIGHING MACHINERY

for all Commercial purposes and graduated to any NATIONAL STANDARD by Patent Machines

HODGSON AND STEAD LIMITED ESTABLISHED 1852.

EGERTON IRON WORKS REGENT ROAD MANCHESTER
Show Rooms 15 New Bailey St SALFORD
Bradford Road DEWSBURY
Ultoxeter New Rd DERBY
NEWPORT MON. and CARDIFF
11 Queen Victoria St LONDON EC

STANDARD, and shows the WEIGHT in two or more different denominations. There are no LOOSE WEIGHTS

"Kainotomon" Rock Drill

SELECTED BY THE
BRITISH, PERUVIAN, & SAXON
GOVERNMENTS.



SUPERIOR AIR COMPRESSORS.

T. A. WARRINGTON,
30, King-street, Cheapside, London.

JORDAN'S PATENT PULVERISING MACHINE,

FOR REDUCING
MINERALS, CHEMICALS, CEMENTS, CEREALS, &c.

T. B. JORDAN AND SON,
52, GRACECHURCH STREET, LONDON.



SIMPLE.
DURABLE.
EFFECTIVE

—
OTHER
SPECIALITIES.
GOLD
REDUCING PLANT.
HAND-POWER
ROCK DRILLS
GENERAL
MINING PLANT.
Illustrated Catalogues on application.

ELLIS LEVER AND CO.,
BRATTICE CLOTH MANUFACTURERS,
WEST GORTON WORKS,
MANCHESTER.

ESTABLISHED A QUARTER OF A CENTURY.

IMPROVED PATENT INGERSOLL ROCK DRILL MEDALS AND HIGHEST AWARDS.

American Institute, 1872.
American Institute, 1873.
London International Exhibition, 1874.
Manchester Scientific Society, 1875.
Leeds Exhibition, 1875.
Royal Cornwall Polytechnic, 1875.
Rio de Janeiro Exhibition, 1875.
Australia Brisbane Exhibition, 1876.
Philadelphia Exhibition, 1876.
Royal Cornwall Polytechnic, 1877.
Mining Institute of Cornwall, 1877.
Paris Exhibition, 1878.

LE GROS, MAYNE, LEAVER, & CO.,
60, Queen Victoria Street, London, E.C.,

SOLE AGENTS FOR THE

DUSSELDORF

WROUGHT IRON STEAM TUBE WORKS.

TUBES FOR BOILERS, PERKINS'S, and other HOT-WATER SYSTEMS.

For Catalogues of Rock Drills, Air Compressors, Steel or Iron Steam Tubes, Boiler Tubes, Perkins's Tubes, Pneumatic Tubes, Boring Tubes, and all kinds of Machinery and Mining Plant, apply—

60, QUEEN VICTORIA STREET, E.C.



PHOSPHOR BRONZE.

REGISTERED TRADE MARKS.

THE BEST METAL FOR
BEARINGS, SLIDE VALVES,
PUMPS,

STEAM FITTINGS, &c.,

Supplied in Ingots or Castings.

WIRE, SHEETS, TUBES, &c.

For Ingot Quotations, see Prices Current, page 6.

Sole Manufacturers:

THE PHOSPHOR BRONZE COMPANY

LIMITED:

SUMNER and EMERSON STREETS, SOUTHWARK,
LONDON, S.E.

The Barrow Rock Drill

COMPANY

SUPPLY their CELEBRATED ROCK DRILLS, AIR COMPRESSORS, &c., and all NECESSARY APPLIANCES for working the said Drills.

Their DRILLS have most satisfactorily stood the TEST of LONG and CONTINUOUS WORK in the HARDEST KNOWN ROCK in numerous mines in Great Britain and other countries, clearly proving their DURABILITY and POWER.

The DRILLS are exceedingly STRONG, LIGHT, SIMPLE, and adapted for ends, stopes, quarries, and the sinking of shafts. They can be worked by any miner.

For PRICES, Particulars and Reports of Successful and Economical Working, apply to—

LOAM AND SON,
LISKEARD, CORNWALL.

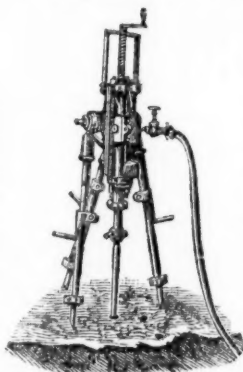
THE PATENT

"ECLIPSE" ROCK-DRILL

AND

"RELIANCE" AIR-COMPRESSOR

SILVER MEDAL—PARIS, 1878—
HIGHEST AWARD.



Are NOW SUPPLIED to the
ENGLISH, FOREIGN, and
COLONIAL GOVERN-
MENTS, and are also IN USE
in a number of the largest
MINES, RAILWAYS, QUAR-
RIES, and HARBOUR
WORKS in GREAT BRITAIN
and ABROAD.

FOR ILLUSTRATED CATALOGUE AND PRICES, apply to—

HATHORN & CO., 22, Charing Cross, London, S.W.

ESTABLISHED 1820.

JOSH. COOKE AND CO., SAFETY LAMP

AND

GAUZE MANUFACTORY,

Honourable Mention, Paris Exhibition, 1878.

Illustrated Price Lists free, by post or otherwise.

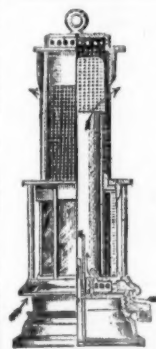
MIDLAND DAVY LAMP WORKS,

Belmont Passage, 203, Lawley-street,

BIRMINGHAM.

Makers of Williamson's Double Safety Lamp

Williamson's Patent Double Safety Lamp shown half in section.



Medal—For Improved Invention—London, Kensington, 1874.
Ditto—Excellence of Workmanship—Wrexham, 1876.

ENGINES, BOILERS, &c., FOR SALE:—
FIRST-CLASS 50-inch cylinder PUMPING ENGINE
ditto 24-inch " ROTARY ENGINE
CALCINER, STONEBREAKER, &c.
Apply to Capt. NICHOLLS, Camborne.

FIRST AWARD,
SYDNEY, 1879.

BICKFORD'S PATENT FUSES

FIRST AWARD,
MELBOURNE, 1881.SILVER MEDAL OF THE MINING INSTITUTE OF CORNWALL, TRURO, 1880,
for an Improved Method of Simultaneous Blasting.

FOR SIMULTANEOUS BLASTING.

BICKFORD, SMITH AND CO.,

THE INVENTORS, AND ORIGINAL PATENTEES AND MANUFACTURERS OF

SAFETY AND INSTANTANEOUS FUSES AND IGNITERS

FOR USE IN ALL BLASTING OPERATIONS AND SPECIALLY PREPARED FOR ANY CLIMATE

Note the **TRADE MARK**: Two Separate threads through centre of Fuse.

BICKFORD, SMITH AND CO.'S Patent Igniters and Instantaneous Fuses for simultaneous blasting are being extensively used at home and abroad. This improved method is the cheapest, simplest, and most dependable ever introduced for simultaneously firing any number of charges. For full particulars, see Descriptive Catalogue.

PRICE LISTS, DESCRIPTIVE CATALOGUES, AND SAMPLES TO BE HAD ON APPLICATION.

FACTORIES—TUCKINGMILL CORNWALL; AND ST. HELENS JUNCTION, LANCASHIRE.

HEAD OFFICE—TUCKINGMILL, CORNWALL.

LANCASHIRE OFFICE—ADELPHI BANK CHAMBERS, SOUTH JOHN STREET, LIVERPOOL.

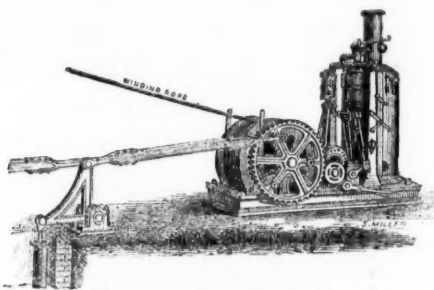
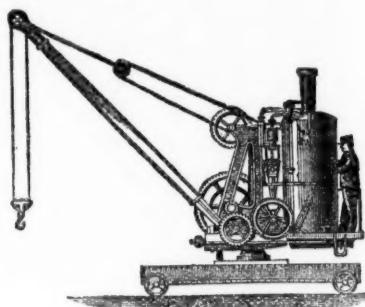
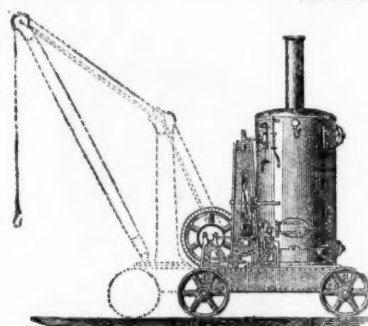
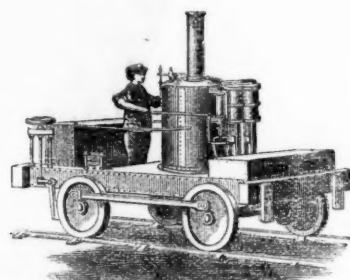
LONDON OFFICE—85, GRACECHURCH STREET, E.C.

Every package bears Bickford, Smith, and Co.'s copyright label.

CHAPLINS' PATENT PORTABLE STEAM ENGINES AND BOILERS.

PRIZE MEDAL, INTERNATIONAL EXHIBITION.

ALWAYS IN STOCK OR IN PROGRESS.

PUMPING AND WINDING ENGINE.
6 to 30 horse-power. Portable or Fixed.
With One or Two Drums, suited for Pit Sinking, &c.STEAM CRANE.
Portable or Fixed, 1 to 20 tons.
For Wharf or Railway.HOISTING ENGINE.
To hoist from 10 cwt. to 15 tons direct.
With or without Pillar and Jib.CONTRACTORS' LOCOMOTIVE.
9 to 21 horse-power. For Steep Inclines and Sharp Curves.
Gauge from about 2½ feet upwards.

CHAPLINS' STEAM NAVVIES, ROAD ROLLERS, DERRICK AND OVERHEAD CRANES, STATIONARY ENGINES, AND OTHER MACHINERY

ESTABLISHED 1849.

ALEX. CHAPLIN AND CO., Patentees and Sole Manufacturers, CRANSTONHILL ENGINE WORKS, GLASGOW.

Sole London House: 63, Queen Victoria Street, London, E.C.

Parties are cautioned against using or purchasing imitations or infringements of these Patent Manufactures.



ROCK DRILLS AND AIR COMPRESSORS

WARSOP AND HILL, ENGINEERS, NOTTINGHAM,
ARE PREPARED TO CONTRACT FOR
DRIVING LEVELS or SINKING SHAFTS, &c., by machinery
with all the recent improvements to ensure rapid advance; or to
SUPPLY and FIX PLANTS, complete.
STEAM CAPSTANS AND UNDERGROUND HAULAGE A
SPECIALITY.JOHN MARSDEN,
MANUFACTURER OF
Air Tubing and Improved Brattice Cloth,
Tarred, Oiled, and Non-Inflammable.THE OILED CLOTH IS ESPECIALLY RECOMMENDED FOR DAMP MINES, AND IS
ALSO A GOOD COVERING FOR SHEDS.
THE NON-INFLAMMABLE FOR THE MORE DANGEROUS MINES.

Samples and prices free, on application at the Works,

VARLEY STREET, OLDHAM ROAD,
MANCHESTER.

GALVANIZED IRON BUILDINGS AND IRON ROOFING.

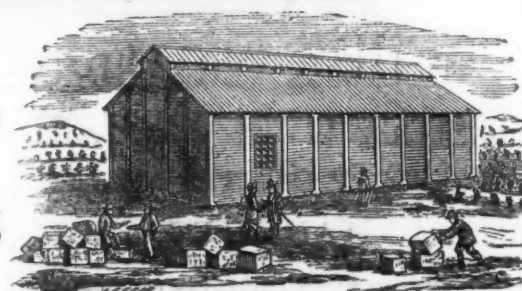
MANUFACTURED BY

MESSRS. HEMMING AND CO.,

OFFICE,—47, MOORGATE STREET, LONDON,

And EVERY DESCRIPTION OF IRON BUILDINGS adapted to all
climates. GALVANISED IRON SHEETS of all sizes in stock.N.B.—Messrs. HEMMING AND CO. have a SPECIALITY of CON-
STRUCTION OF IRON BUILDINGS FOR THE INDIAN GOLD
FIELDS. Established 1861.

WORKS,—OLD FORD, LONDON.



IRON STORES, WITH OR WITHOUT WINDOWS.

T. LARMUTH & CO.,

ENGINEERS,

MANCHESTER, ENGLAND.



SOLE MAKERS OF McCULLOCH'S PATENT ROCK DRILL CARRIAGE

STEAM CRANES, OVERHEAD TRAVELLERS,
ENDLESS CHAIN ELEVATORS, AND FEED SHEETS,
TRAVERSERS AND TURNTABLES,

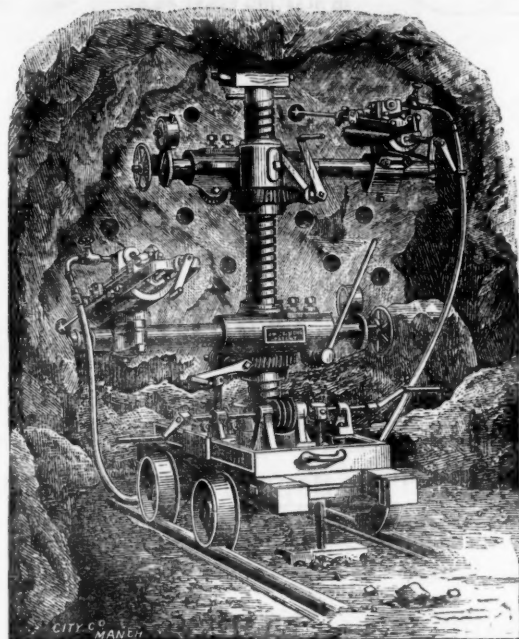
Engineers' Tools of every description.

LLOYD'S FANS,

MINE VENTILATING FANS,
CENTRIFUGAL PUMPS.

SHAFTING, GEARING, AND PULLEYS.

Sole Makers of J. Priestman and Son's Patent Leather Striking Machines.



MAKERS OF STURGEON'S NEW PATENT TRUNK AIR COMPRESSOR

WINDING AND PUMPING ENGINES,
IMPROVED CONDENSING AND NON-CONDENSING HIGH-PRESSURE

STEAM ENGINES,

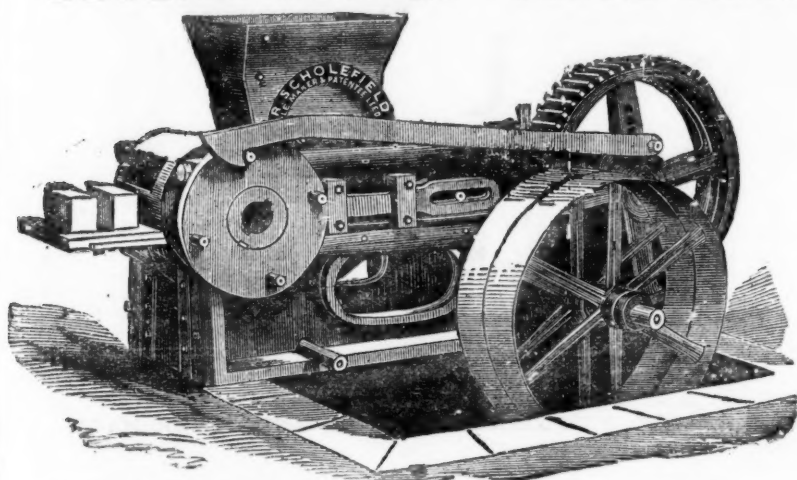
With Ordinary or Expansion Valves, Compounded on Non-Compounded.

SPECIALITIES FOR

LEATHER BELTING MANUFACTURERS.

SHAFTING, GEARING, AND PULLEYS.

R. SCHOLEFIELD'S LATEST PATENT BRICK-MAKING MACHINE.



R. S. begs to call the attention of all Colliery Owners in particular to his PATENT SEMI-DRY BRICK MACHINE, and the economical method of making bricks by his patent machinery from the refuse that is taken from the pits during the process of coal-getting, which instead of storing at the pit's mouth (and making acres of valuable land useless) is at once made into bricks at a very small cost, by R. S.'s Patent Brick-making Machinery. If the material is got from the pit hill, the following is about the cost of

production, and the hands required to make 10,000 pressed bricks per day:—

2 men digging, each 4s. per day	80	8	0
1 man grinding, 4s. 6d. per day	0	4	6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0	2	0
1 boy greasing, 1s. 6d. per day	0	1	6
1 engine-man, 5s. per day	0	5	0
1 man wheeling bricks from machine to kiln, 4s. per day	0	4	0

Total cost of making 10,000 pressed bricks ... £1 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging. As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

THE MACHINES CAN BE SEEN IN OPERATION AT THE WORKS OF THE SOLE MAKER AND PATENTEE DAILY.
SCHOLEFIELD'S ENGINEERING & PATENT BRICK MACHINE WORKS
KIRKSTAL ROAD, LEEDS.

GOLD MEDAL AWARDED, PARIS EXHIBITION 1878.

THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL

MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS & SPRING WORKS, SHEFFIELD.

LONDON OFFICES—50, CANNON STREET, E.C.

PARIS DEPOT—12, RUE DES ARCHIVES

BOSTON MASS., U.S.—40, KILBY STREET.

British and Foreign Safety Fuse Company,

REDRUTH, CORNWALL,

MANUFACTURERS OF

SAFETY FUSE,

FOR MINING AND QUARRYING PURPOSES.

PRICES ON APPLICATION.



CONSULTING GEOLOGISTS.

Messrs. H. STOPES & CO.,

24a, Southwark Street, London, S.E.,

Advise upon Geological Matters bearing on

WATER-SUPPLY, COAL, IRON-ORE,
PHOSPHATES, STONE, BRICK-CLAY,
BUILDING-SITES, DRAINAGE, &c.
ANALYSES FURNISHED.

VIRGIN COAL FIELD ENTIRE—ISOLATED—DRY.

Lease can be arranged on very easy terms.

Full details, and all particulars, from

Messrs. H. STOPES & CO.,

No. 24a, Southwark Street, Borough.

FRANCIS AND JENKINS,

GREENFIELD WORKS,

LLANELLY, S. WALES,

MANUFACTURERS OF THE

Improved Solid Steel Shovels, C. S. Forks, Solid Steel
Miners' Shovels, Railway and Miners' Picks,

teel-pointed Spades and Shovels, Draining and Grafting Tools, &c.

ALSO MANUFACTURERS OF

COPPER WORKS' LADLES

To which special attention is given.

RABBLE HEADS, PADDLES, AND EVERY DESCRIPTION OF
LIGHT HAMMERED WORK.

ALEX. WILSON & CO.,

VAUXHALL IRONWORKS,

LONDON, S.W.,

MANUFACTURERS OF

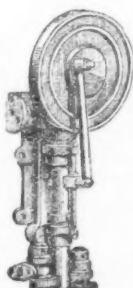
THE VAUXHALL DONKEY PUMPS.

THE EXCELSIOR DIRECT-ACTING
PUMPS.

Air Compressors.

Winding Engines.

HOISTING MACHINERY.



ILLUSTRATED AND PRICED CATALOGUES ON APPLICATION.

HADFIELD'S STEEL FOUNDRY COMPANY.

AWARDED THE ONLY GOLD MEDAL,

AT SYDNEY EXHIBITION, 1880,
FOR STEEL CASTINGS.

AWARDED THE ONLY GOLD MEDAL AT PARIS EXHIBITION,
1878, FOR CRUCIBLE STEEL CASTINGS. FIRST PRIZE
MEDALS AT LEEDS, WREXHAM, AND MANCHESTER EXHIBITIONS
1875 AND 1876. AND THE HIGHEST AWARD FROM THE
MINING INSTITUTE OF CORNWALL, 1878.

ATTERCLIFFE, SHEFFIELD,

MANUFACTURERS EXCLUSIVELY OF

Crucible and Cast Steel Castings,
FOR
Engineering & Mining Purposes,

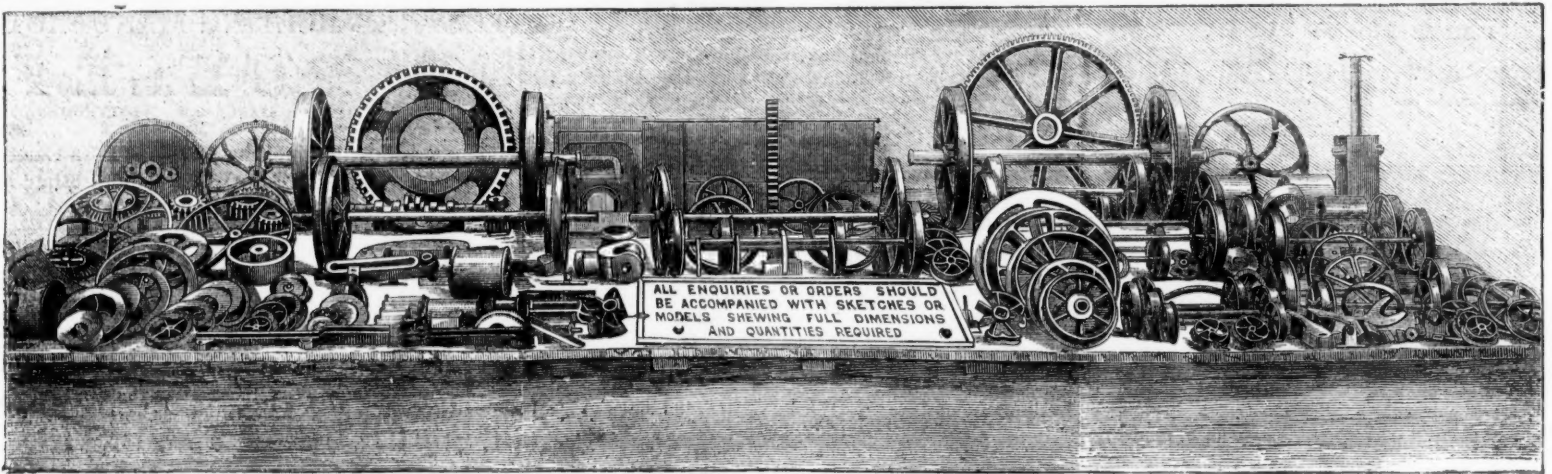
AND ARE THE SOLE MAKERS OF

HADFIELD'S CAST STEEL WHEELS.

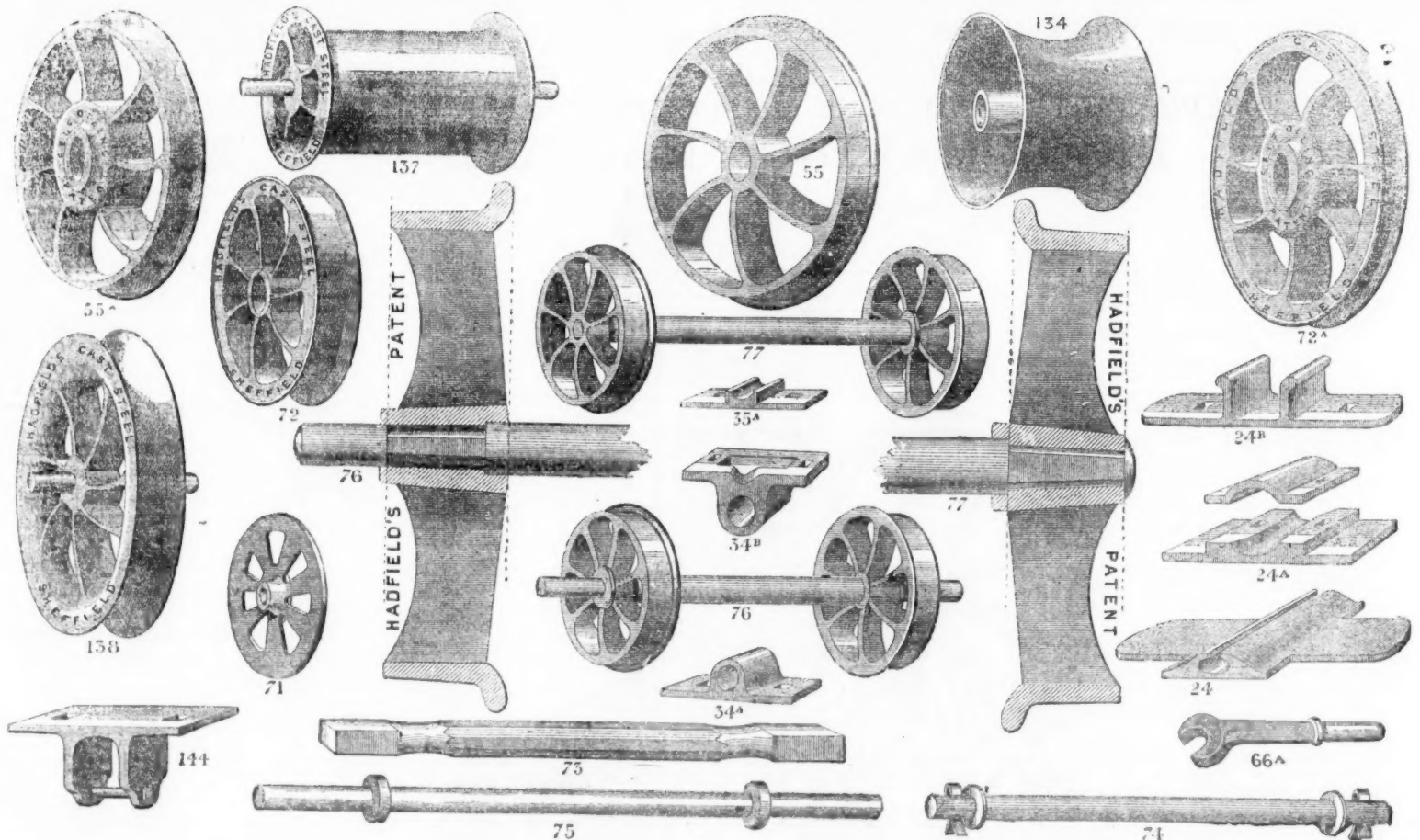
AWARDED THE ONLY GOLD MEDAL

AT SYDNEY EXHIBITION, 1880,
FOR STEEL CASTINGS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c., &c. We have more, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.



N.B.—Prices per Set of Wheels and Axles, fit, d complete, forwarded on receipt of 4 of diameters of wheel on tread, depth of tread, and thickness of axle and rolling load.



[This Sheet of Drawings is Copyright]

HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very cheaply fitted on, and run exceedingly true.

We construct the Arms of wheels upon the curved principle (as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material.

CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannot be broken while working, even with rough usage, and will wear at least twelve times as long as Cast Iron, thus saving animal and steam power, and reducing wear and tear immensely.

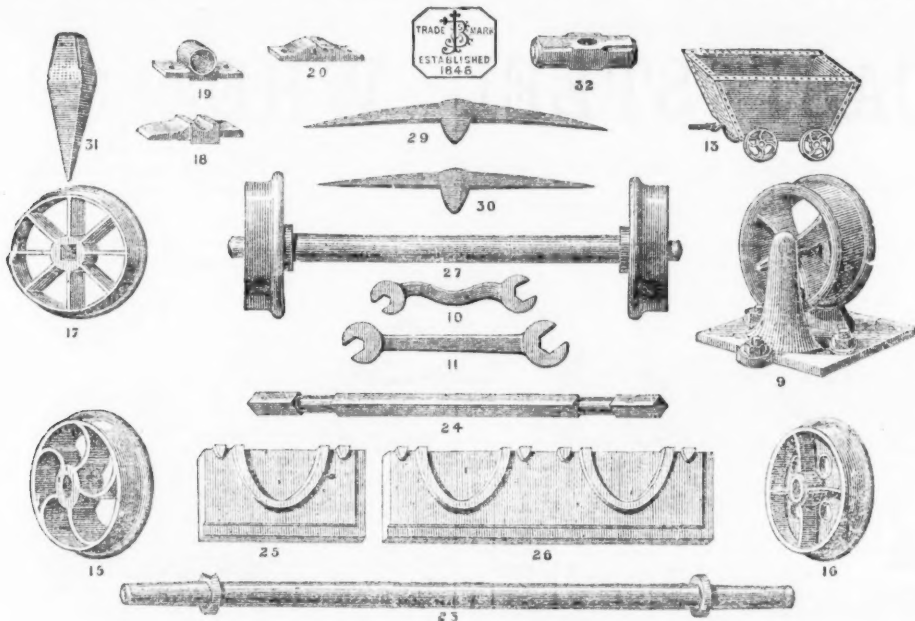
We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES the adoption of which will prove highly advantageous.

MACHINE MOULDED STEEL GEAR WHEELS OF EVERY DESCRIPTION.

ESTABLISHED 1852.

SYBRY, SEARLS, AND COMPANY,

MANUFACTURERS OF THE

CELEBRATED MINING STEEL, BRANDED
CAST STEEL FOR TOOLS, SHEAR, BLISTER, AND SPRING STEEL.Cast Steel Drills.
Solid Steel Hammers.
Steel Picks.
Steel Wedges.Saws.
Files.
Wagon Springs.
Shovels.Anvils.
Vices.
Bellows.
Engineers' Tools.**CANNON STEEL WORKS, SHEFFIELD.****CRUCIBLE CAST-STEEL CASTINGS.****J. BANHAM AND SONS,**

MANUFACTURERS OF EVERY DESCRIPTION OF

Improved Cast Steel, Files, Solid Cast-steel Hammers, &c.,
Steel Works, Carver Street, Sheffield.

ESTABLISHED OVER THIRTY YEARS

JOSEPH FIRTH AND SON'S IMPROVED
PATENT BRICK-MAKING MACHINE

EMBRACES THE FOLLOWING ADVAN-

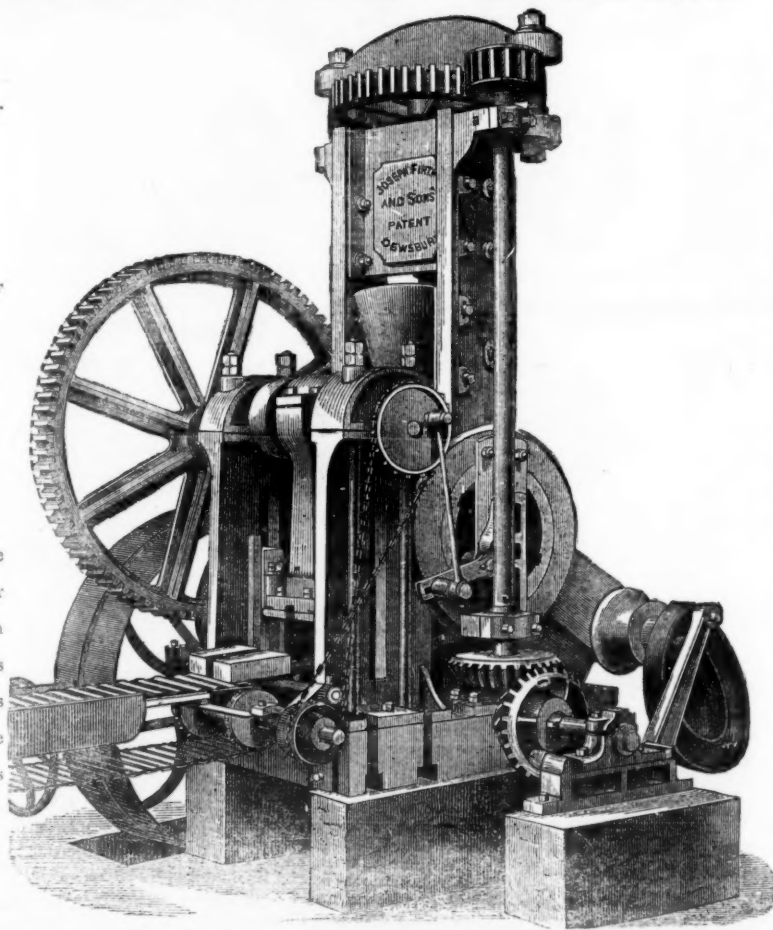
TAGES, VIZ.:—

SIMPLICITY, STENGTH, AND
DURABILITY.COMPACTNESS AND EXCELLENCE OF
MECHANICAL ARRANGEMENTS.

LARGE PRODUCING CAPABILITIES.

MODERATE COST

It makes two bricks at once and will make 12,000 to 14,000 Plastic Pressed Bricks per day, hard enough to go direct to the Kiln without drying; or it will make the bricks thoroughly plastic if required. For Works requiring a Machine at less cost the Machine is made to turn out one brick at once, and is capable of producing 8000 bricks per day.



The Patent Machinery can be seen at work daily at the Works of the Patentees, Webster Hill, Dewsbury, or Crowborough Station, Sussex, L. B. and S. C. Railway.
Their Patent Gas Kiln can also be seen in operation at their Dewsbury Works. It possesses, amongst others, the following advantages, viz.:—Economy in Fuel, Rapidity and Quality of Work, even Distribution of Heat, and Total Consumption of Smoke.

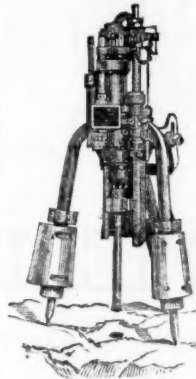
ASBESTOS.

ASBESTOS ENGINE PACKING,
ASBESTOS MILLBOARD JOINTING.
ASBESTOS BOILER COVERING.
ASBESTOS CEMENT,
ARE UNRIVALLED.

Price Lists and all information from the UNITED ASBESTOS COMPANY (LIMITED):—

HEAD OFFICES: 11, QUEEN VICTORIA STREET, LONDON, E.C.
WORKS:—ROME, TURIN, AND GLASGOW.**THE "BEAUMONT"
PATENT PERCUSSIVE
ROCK DRILL**

(BEAUMONT AND FOSTER'S PATENT)



The "BEAUMONT" DRILL is now offered to the public.

For the last three years it has been solely used with complete success by the Aqueous Works and Diamond Rock Boring Company (Limited), and Messrs. Beaumont and Co in their several large contracts.

During this time it has been so improved and developed as to make it without doubt the best Percussive Rock Drill offered for Tunnelling, Mining, or Quarrying Work. Price and prospectus on application to the Manufacturer.

JOSEPH FOSTER,
MINING ENGINEERBOW LANE IRONWORKS
PRESTON, LANCASHIRE.

THE AQUEOUS WORKS AND DIAMOND ROCK-BORING COMPANY (LIMITED).

CROWN WORKS, GUILDFORD STREET, YORK ROAD
LAMBETH, LONDON.

MESSRS. BEAUMONT AND CO.

3, VICTORIA STREET, S.W., WESTMINSTER, LONDON.

Tripods, Tunnelling Carriages, Gadding Cars, Air
Compressors, Air Pipes, and other Mining
Machinery supplied.**WILLIAM BENNETTS,**

PATENT MINERS'

**SAFETY FUSE
MANUFACTURER.**

This manufacture embraces all the latest improvements for use in Blasting in Mines, Quarries, or for Submarine Purposes; and is adapted for exploding Gunpowder, Dynamite, or any other Explosive; and is made suitable for exportation to any part of the world. Price Lists and Sample Cards on application.

All communications to be addressed—

ROSKEAR FUSE WORKS,
CAMBORNE, CORNWALL.**W. F. STANLEY**

MATHEMATICAL INSTRUMENT MANUFACTURER to H.M.'S
GOVERNMENT, COUNCIL OF INDIA, SCIENCE AND
ART DEPARTMENT, ADMIRALTY, &c.
MATHEMATICAL, DRAWING, and SURVEYING INSTRUMENTS of every
description, of the highest quality and finish, at the most moderate prices.
Price List post free.

ENGINE DIVIDER TO THE TRADE.

ADDRESS—GREAT TURNSTILE, HOLBORN, LONDON, W.C.

MINING ENGINEER.

ALEX. DEL MAR.

Mining Engineer, late Director of the United States Bureau of Statistics, Mining
Commissioner for the United States Monetary Commission, &c., 218, BANSOME
STREET, SAN FRANCISCO: Cable address—"Delmar, San Francisco." Branch
Office, 61, Broadway, New York: Cable address—"Delmar, New York." Branch
Office, No. 119, Gresham House, Old Broad-street, London: Cable address—"Delmar, London."

JOSEPH RICHARDS, M.E.,

Late of the Devon Great Consols, England. Late Mineral Agent for the Earl
Fortescue, England. Thirty-one years' experience; eleven years
on the Pacific Coast.

JOHN TREGLOAN, M.E.,

Forty years' experience in England and the United States.

**THE PACIFIC COAST MINE AGENCY AND
MINING PROTECTIVE ASSOCIATION,**22, GEARY STREET,
SAN FRANCISCO, CAL.**THE IRON AND COAL TRADES REVIEW.**

The IRON AND COAL TRADES REVIEW is extensively circulated amongst the
Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron
and coal districts. It is, therefore, one of the leading organs for advertising every
description of Iron Manufactures, Machinery, New Inventions, and all matters
relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
Offices of the Review: 7, Westminster Chambers, S.W.
Remittances payable to W. T. Pringle.

MAPS OF THE MINES, AND OF UTAH TERRITORY

FROISETH'S NEW AND REVISED MAP FOR 1875,—

Size 40 by 56 inches, scale 3 miles to the inch. Handsomely engraved, col-
oured in counties, showing the Towns, Settlements, Rivers, Lakes, Railroads,
Mining Districts, &c., throughout the Territory, and all the Government Surveys
to date. Mounted on cloth, £2; half-mounted, £1 12s.; pocket form, £1.

Also, GENERAL MINING MAP OF UTAH, showing twenty-eight of the
principal Mining Districts adjacent to Salt Lake City, and location of the most
prominent mines. Price, pocket form, 6s.

Also, NEW MAP OF LITTLE AND BIG COTTONWOOD MINING DISTRICTS
showing the location of over Four Hundred Mines and Tunnel Sites, together
with the Mines Surveyed for United States Patent. Price, sheets, 6s.; pocket
form, 8s.

For sale, and supplied by—

TURNER and Co., 57 and 59 Ludgate Hill, London.

B. A. M. FROISETH, Salt Lake City, Utah, U.S.

MONEY LENT, at EIGHT, NINE, and TEN PER CENT., on

FIRST MORTGAGE OF FREEHOLDS FOR IMPROVEMENTS per

STOCKING, said freeholds in the Province of MANITOBA.

Address, HERBERT C. JONES, Solicitor, 20, Masonic Hall, Toronto.

GOVERNMENT INSPECTION OF MINES.

THE INSPECTORS' REPORTS.

The reports of the Government Inspectors of Mines for 1880 are decidedly less favourable than those for 1879, yet still show some improvement upon the returns for the preceding year. The chief increase in separate accidents has been in connection with falls of roof and stone, but the heavier death rate is due to the occurrence of several calamitous explosions. In 1879 South Durham was entirely free from casualties of this class, but in 1880 the single accident at Seaham sacrificed 164. In other districts six explosions resulted in the death of 296 persons; so that the remaining 21 explosions killed but 36 persons, which is by no means satisfactory. Notwithstanding these seven heavy calamities, the collier's occupation will still bear favourable comparison with almost every other industrial employment. In the 3904 collieries of the kingdom there were 484,933 persons employed, who raised between them 146,969,409 tons of coal, 1,988,539 tons of fire-clay, 11,664,726 tons of ironstone, and 894,119 tons of oil-shale, &c.—making together 161,466,793 tons of mineral, so that there was one fatal accident for every 595 persons employed, and one life lost for each 368 persons employed. The tons of mineral wrought for each fatal accident were 198,119, and for each life lost 122,509 tons. In 1879 there were 476,810 persons employed, and there was one death in each 490 persons employed, and for every 149,400 tons of mineral raised; but in 1878 there was one death in each 336 persons employed, and for every 103,183 tons of mineral raised. We subjoin our usual tabulated summary, which will permit of the several classes of accidents being compared:—

COAL MINES—1879.

Names of districts.	Separate accidents.					Deaths resulting.				
	Explosions of fire-damp.	Falls of coal, sides, and roof.	In shafts.	Miscellaneous.	Total.	Explosions of fire-damp.	Falls of coal, sides, and roof.	In shafts.	Miscellaneous.	Total.
Northumberland, Cumberland, & Durham, West., and N. Yorks.	1	23	6	33	63	1	23	6	34	64
East and West Yorkshire	—	28	5	21	54	—	29	6	21	56
Cheshire, Sussex, &c.	—	9	1	5	15	—	9	1	5	15
Lancashire West	3	29	9	15	56	10	31	10	16	67
North Wales, Isle of Man, &c.	—	46	9	30	85	5	47	15	30	97
South Staff. and Worcestershire	—	38	7	28	73	31	40	14	28	113
Gloster, Monm., Somerset, &c.	—	1	—	—	1	—	—	—	—	1
Glamorgan, Pembroke, &c.	1	26	5	14	46	1	26	6	14	47
Cornwall, Devon, &c.	3	18	5	12	38	10	18	5	12	45
East Scotland	5	28	10	12	55	10	28	10	12	60
Ireland	2	46	5	13	66	9	48	5	13	75
Total coal mines	35	390	90	225	740	184	400	115	232	931
Total iron, fire-clay, and shale	—	26	5	11	42	—	26	5	11	42
Gross total	35	416	95	236	782	184	426	120	243	973

COAL MINES—1880.

Names of districts.	Separate accidents.					Deaths resulting.				
	Explosions of fire-damp.	Falls of coal, sides, and roof.	In shafts.	Miscellaneous.	Total.	Explosions of fire-damp.	Falls of coal, sides, and roof.	In shafts.	Miscellaneous.	Total.
Northumberland, Cumberland, & Durham	1	27	3	26	57	1	27	3	26	57
South Durham & Westmoreland	—	34	6	35	75	—	35	8	35	78
Cleveland, ironstone	—	1	—	10	11	—	8	—	10	18
North and East Lancashire	2	41	2	13	58	2	43	5	13	63
Ireland	—	4	—	—	4	—	1	—	—	1
West Lancashire and N. Wales	2	43	7	26	78	10	43	10	26	89
Yorkshire	4	58	6	24	92	11	62	5	24	102
Lincolnshire ironstone	—	—	—	—	—	—	—	—	—	—
Derby, Notts, Leicester, Warwick	—	32	5	19	56	—	35	5	19	59
North Staff., Cheshire, Salop	2	19	3	14	38	63	20	3	14	100
South Staff. and Worcestershire	1	6	—	3	10	2	6	—	3	11
Monmouth, Gloster, Somerset, &c.	2	29	7	11	49	126	31	7	11	175
South Wales	3	63	15	45	126	71	18	46	243	431
East Scotland	1	26	9	19	55	1	26	11	19	57
West Scotland	3	25	—	2	30	4	26	—	2	32
Ireland	1	5	—	6	12	1	5	—	6	12
Total coal mines	26	420	74	243	763	496	437	88	244	1265
Total iron, fire-clay, and shale	2	25	3	22	52	3	25	3	22	53
Gross total	28	445	77	265	815	499	462	91	266	1318

The number of persons employed during 1880 in and about the mines classed as metalliferous was 52,908, against 47,060 in 1879, and 51,458 in the preceding year. Of the total number employed in Great Britain 30,894 were underground, and 20,309 above ground. And in Ireland 1151 underground, and 654 at surface. No females are employed except at surface. There were 15 in Cornwall and Devon, 3 in Ireland, 2 in North Wales, and 1 in Glamorganshire—21 under 13 years old; 780 (including 622 in Cornwall and Devon, 111 in North Wales, and 24 in Ireland) between 13 and 18; and 1462 (including 1134 in Cornwall and Devon, 246 in North Wales, and 48 in Ireland) above 18 years old. From the subjoined summary it will be seen that in the aggregate the following quantities of mineral were produced during the two years reported upon:—

MINING PRODUCE.	1879—tons cwt.		1880—tons cwt.	
	1879	1880	1879	1880
Arsenic (obtained at the mines)	4,784	12	4,350	0
Arsenic pyrites	2,596	3	5,188	0
Barytes	16,423	17	17,632	17
Bauxite	3,657	0	3,470	0
Bismuth ore	1-16	—	None	—
Bluestone	2,449	13	1,720	15
Calc spar	1,948	10	3,181	12
Chert	3,333	0	3,901	0
Cobalt ore	118	11	64	13
Copper ore	48,738	11	51,546	13
Copper pyrites	362	0	330	14
Dross spar	512	9	None	—
Fluor spar	480	6	386	8
Gannister	1,144	0	1,295	0
Gold	447 oz. 11 d. 15 gr.	—	4 oz. 19 d. 11 gr.	—
Gold ore	4 cwt. 0 gr. 24 lb.	—	220 lb.	—
Gypsum	2,453,379	7	3,140,269	15
Iron ore	6,851	18	10,870	1
Iron pyrites	Unknown	—	Unknown	—
Lead ore (dressed)	65,596	17	68,547	19
Lead ore (undressed)	7	1	4	0
Limestone	465,510	5	443,850	19
Lithomarge	3,330	0	4,403	0
Manganese ore	1,052	0	2,478	9
Phosphate of lime	2,630	4	2,595	5
Potter's clay and other clays	55,738	7	52,634	0
Rock salt (exclusive of the white salt made from brine, amounting to 1,800,000 tons)	189,809	0	198,744	0
Sand	670	15	94	4
Silver ore	22	19	15	11
Slate and slabs (dressed)	142,861	11	152,691	7
Slate (undressed)	400	0	1,738	0
Steel (tin)	None	—	50	0
Stone (building stone, flags, kerbs, &c.)	280,937	1	208,468	10
Tin ore (dressed black tin)	12,046	12	11,916	5
Tin ore, partially dressed, estimated to contain 8 tons 5 cwt. black tin	157	0	—	—
Tin ore, undressed (tin stuff), estimated to contain 411 tons 3 cwt. black tin	11,744	1	9,110	16
Wolfram ore	5 cwt. 1 gr. 18 lb.	—	None	—
Zinc ore	13	0	0	13
Zinc ore	20,487	15	24,898	4

The fatal accidents at the mines classed under the Metalliferous

Mines Regulation Act in Great Britain and Ireland amounted to 82, against 61 in the preceding year, the calamities thus being over 34 per cent. more numerous than last year. From these accidents the number of deaths resulting was 81, being 20 more than in the preceding year. It appears that in 1880 in the mines classed under the Metalliferous Mines Regulation Act there was one fatal accident among every 645 persons employed in and about the mines, and one death by accident amongst every 630 persons employed; and in 1879 one fatal accident amongst every 771 persons employed, and one death by accident amongst every 735 persons employed in and about the mines. The subjoined summary will facilitate the comparisons:—

METALLIFEROUS MINES—1879.

Names of districts.	Separate accidents.					Deaths resulting.				
	Falls of ground.	In shafts.	Miscellaneous underground.	At surface.	Total.	Falls of ground.	In shafts.	Miscellaneous underground.	At surface.	Total.
Northumberland, Cumberland, & Durham, West., and N. Yorks.	12	4	4	—	20	14	4	4	—	22
East and West Yorkshire	—	1	1	1	3	—	1	1	1	3
Cheshire, Sussex, &c.	—	—	—	1	1	—	—	—	1	1
Lancashire West	—	—	—	1	1	—	—	—	1	1
North Wales, Isle of Man, &c.	—	4	5	3	12	—	4	5	3	12
South Staff. and Worcestershire	—	—	—	—	—	—	—	—	—	—
Gloster, Monm., Somerset, &c.	—	—	—	2	2	—	—	—	2	2
Glamorgan, Pembroke, &c.	—	—	—	—	—	—	—	—	—	—
Cornwall, Devon, &c.	4	5	3	3	15	5	5	3	3	16
East Scotland	1	1	—	1	3	1	1	—	1	3
Ireland	1	1	—	1	3	1	1	—	1	3
Total	21	16	16	8	61	24	16	16	8	64

METALLIFEROUS MINES—1880.

Names of districts.	Separate accidents.					Deaths resulting.				
	Falls of ground.	In shafts.	Miscellaneous underground.	At surface.	Total.	Falls of ground.	In shafts.	Miscellaneous underground.	At surface.	Total.
Northumberland, Cumberland, & Durham, West., and N. Yorks.	8	5	3	2	18	8	5	3	2	18
East and West Yorkshire	—	—	—	1	1	—	—	—	1	1
Cheshire, Sussex, &c.	—	—	—	1	1	—	—	—	1	1
Lancashire West	—	—	—	1	1	—	—	—	1	1
North Wales, Isle of Man, &c.	4	5	7	5	21	4	5	7	5	21
South Staff. and Worcestershire	—	—	—	—	—	—	—	—	—	—
Gloster, Monm., Somerset, &c.	—	—	—	1	1	—	—	—	1	1
Glamorgan, Pembroke, &c.	—	—	—	1	1	—	—	—	1	1
Cornwall, Devon, &c.	9	11	5	3	28	9	11	7	3	30
East Scotland	1	1	—	1	3	1	1	—	1	3
Ireland	—	—	—	1	1	—	—	—	1	1
Total	31	21	17	13	82	31	21	19	13	84

The subjoined tables show, amongst other things, that there has been an increase in the output of coal to the extent of 13,249,016 tons, or over 9½ per cent. upon the entire annual production, and being a larger rate of increase than has taken place for many years:—

1879.

Name of districts.	As computed by each Inspector for his own district.		No. employed in the district.	No. employed in the district.	Tons of mineral raised per separate fatal accident.	Tons of mineral raised per separate fatal accident.	Tons of mineral raised per separate fatal accident.	Tons of mineral raised per separate fatal accident.	Number of fatalities.
	Males employed.	Tons mineral raised.							
Northumberland, Cumberland, & Durham, & N. Durham	45,862	13,167,369	728	716	212,857	209,531	204	—	—
East and West Yorkshire	49,575	17,148,670	918	885	320,895	309,434	217	—	—
Cheshire, Lancashire, & Cleveland	7,159	6,713	477	477	314,760	324,760	44	—	—
North & East Lancashire	30,757	8,993,697	549	459	162,040	135,437	321	—	—
Ireland	1,185	129,003	—	—	—	—	30	—	—
West Lancashire and North Wales	39,458	11,783,724	453	407	136,503	122,431	242	—	—
Yorkshire	60,087	16,241,443	780	527	215,957	145,866	505	—	—
Lincolnshire ironstone	—	134	—	—	—	—	10	—	—
Derby, Leicester, Notts, & Warwickshire	50,923	14,036,642	1107	1083	307,484	300,942	399	—	—
North Staff., Cheshire, & Shropshire	23,161	5,562,645	565	483	175,394	149,816	248	—	—
St. Stafford & Worcester	23,555	5,329,197	406	374	166,208	153,016	401	—	—
Monmouth, Somerset, & part Glam., & Brecon	30,060	7,439,627	455	400	114,513	100,771	346	—	—
South Wales	47,994	12,412,136	393	246	103,461	64,730	316	—	—
East Scotland	40,711	11,300,587	740	472	232,506	148,696	361	—	—
West Scotland	26,289	6,189,360	626	571	194,529	177,613	312	—	—
Totals and averages	476,810	133,720,393	610	490	185,890	149,400	3956	—	—

* The total quantity of ironstone, &c., from the different districts was 9,337,766 tons, which, added to 133,720,393 tons of coal, gives the total of 143,108,159 tons.

1880.

Northumberland, Cum- berland, & N. Durham { " Ironstone "	47,520	15,696,849	834	834	279,670	279,670	206
" Durham & W. York- shire "	53,240	20,989,450	700	22	280,800	83,185	221
" Riding of Yorkshire and Cleveland "	7,972	5,270	443	443	358,170	358,170	46
" Ironstone "	—	6,441,783	—	—	—	—	—
North & East Lancashire, Ireland	30,997	9,519,858	534	492	166,131	152,946	311
" Ironstone "	1,071	133,792	1071	1071	136,518	136,518	30
" Ironstone "	—	1,051	—	—	—	—	—
West Lancashire and North Wales	39,454	12,029,751	506	443	155,527	136,304	242
" Ironstone "	—	35,476	—	—	—	—	—
Yorkshire	60,474	17,468,536	613	576	190,110	170,194	490
" Ironstone "	—	180,250	—	—	—	—	—
Leicestershire, Ironstone, Derby, Leicester, Notts, & and Warwickshire	49,330	14,500,995	881	836	261,130	247,852	387
" Ironstone "	—	51,197	—	—	—	—	—
North Staffs., Cheshire, & and Shropshire	22,852	5,660,800	476	206	157,842	68,255	245
" Ironstone "	—	1,859,900	—	—	—	—	—
Stafford & Walsley, Ironstone	23,493	9,560,000	534	522	228,055	222,987	413
" Ironstone "	—	126,245	—	—	—	—	—
Southampton, Somerset, & part Glam., & Brecon, Ironstone	29,811	7,835,483	608	170	163,222	45,702	311
" Ironstone "	—	40,344	—	—	—	—	—
South Wales	50,416	15,283,829	385	208	118,600	63,937	341
" Ironstone "	—	108,516	—	—	—	—	—
East Scotland	41,276	12,019,833	676	655	224,506	217,389	361
" Ironstone "	—	772,043	—	—	—	—	—
West Scotland	26,882	6,255,433	625	584	195,312	182,574	290
" Ironstone "	—	1,887,274	—	—	—	—	—
Totals and averages	484,933	146,969,409	595	368	198,119	122,509	3904

the influence of the after-damp. In instances, to my own knowledge, many of the workmen have been blocked in by falls on the main headings, and not being able to come away, or rescued quickly, have succumbed to the effects of the after-damp. While collieries are in extent about 600 yards from bottom of pit to working places, the cost of laying the pipes, &c., would not be very much, taking into consideration that the construction would be permanent, as before stated, and not liable to get out of order, or requiring to be renewed continuously, as is the case with machinery; and the cost of extension, as the main workings would be driven, would be trifling.

Tylacoch Colliery.

JOHN THOMAS, Manager.

HOOVER HILL GOLD MINE.

SIR,—Your correspondent, Mr. Alex. Del Mar, under the head of "Mining in North Carolina," describes the Crowell Hill Gold Mines, and concludes as follows:—"The Crowell property will, in my opinion, rank in productivity far above the Hoover Hill." As a shareholder in the latter I should be obliged by his stating in next week's Journal whether he inspected this mine as well as the Crowell property? I should assume from his comparison of the two that he must have done so; but, as he does not state it, I should be glad to know that he has arrived at his opinion only after a careful inspection of both properties, and if he has visited and inspected the Hoover Hill. Perhaps he will kindly tell us more about it.

June 25.

HOOVER HILL.

EUREKA (NEVADA) MINING DISTRICT.

SIR,—I have the pleasure to hand you my usual budget of news from this locality:—

The Wales Consolidated hoisting machinery started yesterday. John E. Griffith had entire charge of its construction, and deserves special mention for the skill displayed. Everything started with a marked degree of ease. Not a fault can be found with any part of the works.

Foreman Rice, of the Eureka Consolidated, has received a request from the superintendent of a mine near Mineral Hill to send him six practical and experienced miners. Joe has secured the men, and they left by this morning's train for the new field.

Eureka Consolidated liquidated town bills yesterday, and the Richmond paid the furnacemen. The latter company will pay its miners to-day and town bills to-morrow. Wales Consolidated will pay all bills to-day, and the Ruby and Dunderberg will disburse coin on Thursday.

R. Ryland has commenced the construction of a new brick assay office at the Eureka Consolidated Works.

Williams and Co. leased the 300 ft. level of the Connolly Mine on the 1st inst., and are now taking out ore. Knudsenborough and Dunn, who are working the 200 level, are also extracting ore and doing well. The company is working the surface ground, but are not shipping any ore at present, owing to the suspension of the Richmond furnaces.

George T. Terry, superintendent of the Jackson Mining Company, arrived from San Francisco last evening. He left for Pioche this morning, and on his return will remain here. B. C. Levy, superintendent of the Bowman Mine, desires to let a contract. Active mining operations will be inaugurated immediately by the Kit Carson Company.

The following very sensible ideas are copied from the Chicago Mining Review:—"Considering the reputation which mining has borne for uncertainty, and the speculative spirit which for a time controlled its operations, it is a question whether any business can show a more rapid advancement in public favour, or a more substantial and solid adjustment to a position of reliable and permanent business basis, in the same short space of time. Its history is that of a giant roused from sleep to find its home filled with a class of speculators and gamblers, which it immediately drives out, and sets its house in order to entertain merchants and traders of a more respectable character. The work has been most thoroughly accomplished, and the house of mining is now clean and respectable. There may be some questionable operations outside in the street among those who were cast out; but a man now has his choice, and is no longer compelled to deal with an unreliable class of operators. The invasion of this promising field by a large body of reliable business men made a character for the mining industry which has been until now only a tower of strength, but has been the chief cause of its marvellous and healthy growth. In business operations confidence is the main pillar of success. Mining has secured the public confidence by the character of those most largely interested in its development. This fact, taken in connection with its vast resources, unmeasurable and inexhaustible, by the forces and demands of one century, make it difficult to predict the measure of its development and the advantages that will accrue from its product."

London, June 29.

RUBY HILL.

MARBELLA IRON ORE.

SIR,—I find the shares of the above mine have come down a little, through I believe adverse rumours having been circulated as to the dividend anticipations. The rumours I have just heard have been circulated by people to serve their own purpose, and cause a fall in the stock. The report is far from being bad, and I am sure will much more than satisfy any doubtful party. The shares I believe will go to par, and I advise those who acted on my advice to hold their shares and to increase their holding, and they will never have cause to regret it. A very good future is before this mine, and now is the time to buy the shares and hold.

Glasgow, June 28.

A SCOTCH MINING ENGINEER.

LEAD REPORT.

SIR,—Since our last our market has been a very quiet one and continues to fall. The sale of 600 tons of Greek lead, which is considered a fair test of the Lead Market both here and in London, only realised for the lot, containing 40 ozs. of silver, 144. 5s., and the best Tynny offer was 137. 17s. 6d. There was a lot of 150 tons of rich lead ore advertised for sale by auction at the Church Burn Mine, near Haltwhistle; but as the directors printed on the conditions of sale that there was a reserve bid of 92. 10s. per ton, no buyers came to the sale.

I understand it is proposed to hold regularly monthly sales of lead ore at Newcastle by auction, instead of tender, and it is the opinion of some that higher prices will be obtained by special competition at auction than by tender.

STOCKS.

Newcastle-on-Tyne, June 30.

CURIOSITIES IN MINING—WHEAL UNY.

SIR,—Among the many schemes which are now before the mining public perhaps the most curious is the recent offer of the East Uny Mine to the shareholders in Wheal Uny. As a shareholder in the latter mine, I certainly think the matter ought to be ventilated, and perhaps some other shareholders may be glad that attention has been called to it. A short time since there was a change in the management of Wheal Uny, and a committee of management was appointed. At that time East Uny formed a part of Wheal Uny, but one of the first acts of the committee was to divide the sett, and sell the East Uny portion with the machinery and materials for the sum of 15000. It is very curious that the same post which brings me a letter asking for payment of a call made in Wheal Uny on April 21 for over 20000, should also bring a circular from the purser of East Uny offering me, as a shareholder in Wheal Uny, the privilege of buying back a portion of our former sett at the modest price of 90000, which was purchased a few months previously for 15000; and the alternative is threatened that if the Wheal Uny shareholders do not take up the shares at once they will be offered to the public. What he thinks will happen when these shares are offered to the public the deponent sayeth not. I have, however, good reason to believe that every effort has already been made to get the shares placed; and I should like to know if this property is so valuable why was it sold by the Wheal Uny executive at so low a figure? Since they have had the mine they have forked about 50 fms. of water, and driven about 25 fms. of ground. True, the purser says they "have really a rich bunch of copper ore;" but as the agents set no money value whatever on it, it is evident that they "really" do not attach so much importance to it. Consequently I am at a loss to know why we are asked to buy it back again at a premium of 600 per cent. on the original purchase.

I would take this opportunity of asking what are the prospects of Wheal Uny, and is the mine ever likely to emerge from the "calling" state? It has been making calls for the last 30 years, and I confess I fail to see that the outlook is any brighter since the change in the management. I notice the new manager in his report of Dec 23, 1880, states that the returns of tin ore are 20 tons per month, and that the improvements he was then making would result in an increase in the returns, and he concluded with the statement that "we shall be able to raise sufficient tin in the coming 16 weeks to pay the cost of the mine." Notwithstanding these promises, the result of the 17 weeks' working to April 21 was, instead of an increase on 20 tons of tin per month, a decline to less than 15 tons per month; and instead of paying the cost of the mine there was an acknowledged loss of 10254. 8s. 3d. This certainly is something but encouraging to me to buy East Uny shares at 600 per cent.

premium; but I fear matters will be even worse at the next meeting, as I believe that notwithstanding the dry season, and the fact that East Uny is drained, the bottom of the mine at Wheal Uny is rarely seen, and not a single inch has been sunk since the present management has had the control.

A SHAREHOLDER.

June 28.

DESCRIPTION OF MINES.

SIR,—Several mines have been referred to in the *Mining Journal*, the description of which, as to position, have been so vague that the reader has been unable to determine their exact location. I called attention, a few weeks ago, to one mine so described. I will now direct it to another—Wheal Worthy. I have not the prospectus at hand, but it was said to be in the Wheal Vor district. I have known that district intimately 70 years, but I never knew a mine there of that name. I suppose that Wheal Worthy is a new name applied to an old mine; if so, why not mention the old name that its situation might at once be recognised? It is described as a "worthy" mine—a good speculation or no speculation; then the promoters had no reason to fear to state where it stands in that celebrated district. As I and many of your readers are ignorant of its whereabouts perhaps the promoters will be kind enough to give us the old name, the name of the land, and of the landowner, that, if it deserves a good word (which is very probable), I may have an opportunity of giving it in the columns of the Journal. The district has been long regarded as a first-class one, because of the immense returns and profits from three mines therein—Great Wheal Vor, Great Work, and Godolphin. All the other mines are comparatively shallow, which upon a fair scale of development may also become prizes. Numerous setts have recently been taken up around Wheal Vor, more especially eastward of that mine, which are said to be highly promising, and which are about to be worked for tin. Some particulars of those I hope to supply to the Journal in a week or two.—*Truro*, June 30.

R. SYMONS.

GOLD IN WALES—No. XXX.

SIR,—Since my last communication on this interesting subject I have been engaged for the most part in the re-exploration of the Golden Valley of the Mawddach, Merionethshire. With the expert and energetic assistance of my young friend, Mr. Arthur Madge, F.C.S., I have made more than 700 careful assays and amalgamation trials of the lodestuff of the valley (good, bad, and indifferent) for gold and silver, besides 120 or more trials of "intractable" mixed sulphides, arsenides, &c., from Newfoundland, Colorado, Toronto, Ecuador, New Zealand, Lalop, Scotland, Cornwall, Devon, and elsewhere, with the primary object of testing my new method of treating "antagonistic ores" with quicksilver without the common hindrance by "sickening" of the quicksilver, or wasteful loss of it, in the operation. I may say that the amalgamation trials were made of quantities varying from 14 lbs. to 30 cwt. each, and that in every instance the results were satisfactory.

Since I first became interested in the Welsh gold question I have made myself, superintended the making of, or paid for the making (by the first men of the day) of more than 1500 assays and amalgamation operations upon mixed minerals of this lovely valley, for the purpose of ascertaining their commercial value for gold and silver when taken through and through. These trials I abstract as follows:—

1000 for gold,
343 for silver,
30 for copper,
78 for lead,
63 of metallic lead for gold and silver.

1514

The following is a classification of results of the 1000 experimental and working trials for gold referred to above:—

14 trials gave of gold, nil.

140 " " traces, to weight under 3 dwts. per ton.

48 " " 3 dwts., and under 5 " "

133 " " 5 " " 10 " "

64 " " 10 " " 1 ozs. " "

129 " " 1 ozs. " " 2 " "

74 " " 2 " " 3 " "

189 " " 3 " " 5 " "

92 " " 5 " " 10 " "

40 " " 10 " " 20 " "

22 " " 20 " " 50 " "

15 " " 50 " " 100 " "

11 " " 100 " " 200 " "

17 " " 200 " " 500 " "

2 " " 500 " " 1000 " "

1 " " 1000 " " 2000 " "

3 " " 2000 " " 5000 " "

5 " " 5000 " " 10,000 " "

1 " " 10,000 " " 20,000 " "

Classification of results of the 343 experimental and working trials for silver, referred to:—

88 trials gave of silver under 5 ozs. per ton of mineral.

40 " " 5 ozs., and under 10 " "

27 " " 10 " " 20 " "

31 " " 20 " " 30 " "

67 " " 30 " " 50 " "

39 " " 50 " " 100 " "

34 " " 100 " " 200 " "

10 " " 200 " " 500 " "

2 " " 500 " " 1000 " "

0 " " 1000 " " 2000 " "

5 " " 2000 " " 4000 " "

Table of gold produce by ordinary means from five localities in Merionethshire, calculated at different periods of operation, as received by the rightful owners, who paid royalties thereon:—

Tons cwt. lbs. Ozs. dwt. gr. Averaging per ton. Ozs. dwt. gr.

No. 1.—300 0 0 yielded 176 0 0 0 11 17

No. 2.—311 0 0 " 117 5 0 0 7 13

No. 3.—0 1 0 " 18 0 0 360 0 0

" 0 4 56 " 66 0 0 293 6 0

" 400 0 0 " 280 0 0 0 14 0

" 970 5 0 " 478 5 0 0 9 21

Also, 1593 0 0 (poorest) 562 10 0 0 7 0

No. 4.—1 10 0 yielded 13 0 6 19 10 3

" 5 0 0 " 36 6 4 7 5 5

" 21 14 0 " 119 8 0 5 10 11

" 133 18 56 " 282 5 13 2 2 3

" 2109 0 0 " 1073 19 12 0 8 21

" 2543 0 0 " 1356 5 1 0 10 16

" 3619 0 0 " 1611 7 1 0 8 17

" 3900 0 0 " 1672 18 1 0 8 7

No. 5.—0 0 20 " 8 0 0 896 0 0

" 0 11 0 " 297 0 0 540 0 0

" 13 16 32 " 4566 0 0 330 10 13

" 39 10 0 " 9363 0 0 237 0 0

" 2383 10 0 " 10,777 0 0 4 10 10

" 4008 0 0 " 11,479 0 0 2 17 6

" 4671 0 0 " 11,595 0 0 2 8 17

" 5063 0 0 " 11,662 0 0 2 6 1

Taking the total results of these five localities we have:—

No. 1.—300 tons, which yielded to owners 176 ozs. gold.

No. 2.—311 " " 117 " "

No. 3.—970 " " 478 " "

" 1590 " " 562 " "

No. 4.—3900 " " 1672 " "

No. 5.—5063 " " 11,662 " "

Total ... 12,137 tons, which yielded to owners 14,667 ozs. gold.

Average, 14 ozs. to the ton of mineral.

A statement courteously made for me May 23 by the Hon. James Kenneth Howard, the Commissioner in charge of the Land Revenue at the Office of Woods and Forests, shows that the royalties paid to the Crown under gold leases and licences to Michaelmas, 1880,

amounted to the sum of 50157. 13s. 9d. Some of your readers probably will be interested in these statistics, all of which are authentic.

London, June 22.

T. A. READWIN.

MINING IN CARDIGANSHIRE.

SIR,—As a resident in Cardiganshire I am favoured with advantages of personal observation and experience, and I trust you will afford me space to advance a few remarks on the present deplorable state of mining in this county; however much it may be and is alleged to the contrary, a most exceptional and unsatisfactory condition is presented everywhere to a close and observant eye. Polished reports have emanated from enthusiastic writers, glowing with anticipations of large returns, and consequently immediate dividends, which serve but to lead capitalists blindfold into speculation beyond their means, and have caused the total withdrawal of many bona fide capitalists from home enterprises; they turn on their heel, and give India the benefit of that capital which would certainly be invested to a greater profit in legitimate home mining. I am sensible of, and have no wish to ignore, the detrimental effects of the low figures obtainable for our ores; but this does not in the slightest degree affect mines which make no returns, and are worked in an exploratory point of view—except in respect of the unproportionable cheapness of labour, which favours them in like manner to other mines returning ores. I could mention several once leading dividend-paying mines which are now working at the cost of the future on unfair and unjust principles, hoping to tide over the present depression by self-support—a veritable "picking the eyes out." Until the excitement of foreign gold mining is allayed I fear the Cardiganshire mines will be neglected.—*Cremystreith*, June 25. A RESIDENT.

CLITTERS MINE.

SIR,—The honest endeavours of Mr. Secombe to afford an opportunity to the shareholders in the above mine for acquiring full particulars relative to their mine previous to a discussion of the division of the sett has hitherto resulted in totally irrelevant questions being asked. These questions first took the acute form of covert aspersion of the management of the mine, which was no sooner controverted than the malady developed into the chronic form of limited liability which "Another Shareholder" advocates on the assumption of its being in accordance with the "spirit of the times." I need not ask whether this be a spirit of light or of darkness, it certainly is a money-making spirit, regardless of consequences, and its later and fuller development is nearly akin to gambling, and consequently an immoral spirit. I should, therefore, counsel all those engaged in legitimate cost-book mining to carefully consider the tendency of this "spirit of the times" before making a change.

Suppose we move with the "spirit of the times" will limited liability give us larger lodes, more ore, or ore of a better quality in the lodes? Can this mine be worked and the ore raised and prepared for market cheaper by this method than under the present system? Will the payment of a 10000. a year for London offices, paid directorate, &c., be likely to lessen the cost of developing the mine?

Clitters Mine has hitherto been in the hands of men of integrity, and the management has been conducted on strictly honourable principles. Let us continue in the course, and with a better price for copper, which will come with a revival of trade—not with limited liability—we shall be in possession of one of the best paying copper mines in England. These restless discontented "spirits of the times," who are always eager for any change that will suit their individual interests, can find ample scope for their genius and their capital in the numerous companies now being floated, and enjoy limited liability to their heart's content.

YET ANOTHER SHAREHOLDER.

GOOD NEWS FOR NORTH DERBYSHIRE.

SIR,—Notwithstanding the extremely depressed state of mining which has existed for several years past in this district there is a decided hope of its improvement, as we learn that a new company has been formed, and has purchased a couple of mineral properties, hitherto known by the names of "Stand-to-Thyself" and "Oxlow," the whole comprising several small holdings or setts, containing five distinct veins, traversing both properties for fully a mile, and all of them (as far as their course has been ascertained) will form a junction westward and downward (depth) within the company's property. The letter V will be a good illustration of what the writer intends to convey, taken as it stands to represent depth, or supposing the angle to be the westward point of juncture. The property is in close proximity to the village of Peak Forest, well known to many of your readers as lying in one of the richest parts of the Peak for minerals, particularly lead ore (galena), and some little explanation may be necessary why there has been such deadness where extremely rich productive qualities are known to exist. The explanation lies in the fact that Nature in its bountiful generosity held forth temptation to the miner at the very surface in loose veins, which were seized upon, and cut away to a depth of 35 fathoms on a system known as "tribute work." Practical miners will understand this term as meaning "getting all they can for as little as they can," and consequently the work as regards securing, &c., was only very indifferently carried out. What was the result? The workings ran together, and the owners of the properties were so disgusted with the way in which the matter had been carried on they refused to submit it or them to a similar treatment. Eventually a miner of life-long practical experience in all its branches, and having a thorough knowledge of the district, took up the matter, and the present purchase has been effected through his influence and instrumentality. He is well known to the inhabitants, and so great is their confidence in his abilities (knowing, too, what riches the properties produced when only worked in a very careless and indifferent manner) numberless applications have been made for shares, and although the works have only just been begun within the last few days 100 per cent. premium has been offered; but present proprietors intend to retain. Some of the men now employed worked in the mines before it closed in, and only got to surface in time to save their lives. One of the veins alone yielded 3 tons to the fathom.

An additional charm to the concern lies in the fact that there is no water to contend with, nor is it suspected that there will be for a very much greater depth. Therefore, the only machinery required will be that of winding, crushing, and cleaning. As the properties adjoin and will be worked together, it has been thought necessary for convenience to class them under one name—the Peak Great Consols. The writer takes a great interest in mining in this neighbourhood, and will be happy to communicate further with you from time to time to report progress, &c.

CORRESPONDENT.

YEOLAND CONSOLS (Rotherborough Downs, Devonshire).—This old mine has resumed its working after a rest of some 26 years. It will be remembered that it stopped in 1855, partly in consequence of the dangerous nature of the shaft and the want of a unanimous feeling of the shareholders to set down a vertical shaft. The mine was worked by one shaft, which was upon the old system put down on the lode with the incline, the ground being soft and of a slacking nature great expense and stoppage were frequently occurring. The company at this time had no means of bringing in a deep adit, as the lower lands to the east were not acquirable, but it appears that the present lessors, being persons of means and influence, have secured all the lower lands of Sir F. Drake, Bart., and M. Collin, Esq., which embrace the whole of the River Meavy, the lodes and lands on both sides thereof for nearly two miles, therefore the greatest drawback to the mines' previous success is now removed, as it not only affords deep adit drainage to some 80 fms., but enables the mines to be worked by water-power instead of as formerly by steam-power. The Yeoland tin lodes and sett from their central position and surroundings by rich and numerous mines, such as old Wheal Betsea, Wheal Friendship, Wheal Jewel, Wheal Robert, Barrington Park, Battle Hill, Wheal Ann, East Lovel, Foster, Devon Great Consols, and some 40 other mines within six miles zone has always commanded the consideration of the leading mine agents of the county as affording great advantages and prospects in working out a great mine, the lode being known to be well defined and of metallic strength equal to

any in the two counties (Devon and Cornwall). When the mine stopped they were selling their No. 1 tin ore at 64s., and their lowest, No. 3, at 24s. 10s. per ton. They were working upon a lode of 6 ft. in width, and all raised went to stamps. As the present lessors are positioning the works with activity, and as ore can be at once raised we shall surely shortly hear further from Yeoland.

REPORT FROM CORNWALL.

June 30.—There has been an almost unaccountable quiescence in mining matters, in spite of the fair price of metals, and the reasonable prospects that presented themselves of a further rise. Having waited until Midsummer (and not without some reward), it is now thought that further improvement will be delayed until the autumn. We confess still to hold a different view, and to regard the present position of affairs less as an indication of the true state and prospects of the market than of its disturbance by the diversion of public attention to such a host of new concerns—good, bad, and indifferent—the latter, we are afraid, as the revival extends its border, increasingly predominating. Capital is so abundant, and the difficulty of employing it to advantage so great, that established mines ought to derive greater advantage than they do; instead of which there is reason to fear that they will suffer by being confounded in the uninformed public mind with adventures of a less certain character, when the crash comes, for which some, both at home and abroad, are so surely preparing the way. Already there has been proof given that a somewhat uneasy feeling exists and is being fostered, and though whatever may happen will in nowise affect our true and permanent interests, still it is well to keep the course of events well in mind, and to recognise that mining in general, especially at the present juncture, may be very much better than it seems.

Judicious action at the present juncture is of all things to be anxiously hoped for. With it we may expect to see by this time next year something like 50 per cent. more mines actively and in many cases prosperously at work, and a gratifying revival in districts that are now all but dead. Without it we are likely to be landed in a region of more uncertainty than ever, and have once more to struggle for the recovery of lost ground. Many an excellent concern has in times past been brought to an untimely end by the way in which it has been financed; and though the lesson has to a large extent been learned, it has not been so universally accepted that caution is unnecessary. Those who are personally acquainted with mining matters need no advice; those who are not should not be above taking it, or if they will not, and their ventures come to grief, should not think of blaming any one but themselves. Readers of the Journal need be under no difficulty in knowing where good advice may be obtained.

Efforts are being made to establish steam tramways in various parts of Cornwall, but not at present in the mining districts, where they would be in many cases of special value. It is rather surprising that a county which took such a prominent part in the early development of the railway system should have done so little of late towards the improvement of means of communication.

TRADE OF THE TYNE AND WEAR.

June 29.—There has been considerable activity in the Steam Coal Trade during the past week, a good supply of tonnage, and at most of the large works (Seaton Burn Dennington, Seaton Delavel, Cambis Bedlington—indeed at most of the best steam coal works) the output has been pushed to the utmost to get vessels loaded. At some of the second-class works producing bunker and other second-class coal there are still complaints of insufficient employment, but those are now the exception, the rule being full employment, which is expected to continue for some time to come.

In Durham many of the best class works are fully employed, producing gas, steam, and coking coal, but there are also many second-class works only partially employed. It is difficult to account for the apparent depression in the Durham coal and coke trade. At Tyne Dock the shipments of coal and coke during the past week have been about up to the average (about 93,000 tons), and it is estimated that the shipments at this important station during the past six months will be equal to the shipments in the first half of the year 1880. The iron trade—that is, the make of iron in Cleveland and Durham—has not been materially reduced. The quantity of coke sent inland to the West Coast and to the Midland districts has, we believe, been reduced a little. The output of coal at many of the pits in Durham has, perhaps, been increased to some extent, and this may partially account for the apparent depression. It is, of course, the dull season of the house coal trade, and this has a depressing effect, but it is evident that the output of coal in the Tyne and Wear is too great to afford brisk employment all round, and so long as this position continues an advance in price so much needed cannot be expected to occur. At Blyth there is a good supply of foreign vessels, which are loading steam coals for Russia. The contracts which have been made for manufacturing coal and coke to the local ironworks for the next half-year are drawing on completion, and under present circumstances prices have been secured quite as good as could have been expected. The local chemical trade has improved considerably lately, and there is now a steady business doing, but prices are still comparatively low. There are, however, small stocks held, and any improvement in the demand must have the effect of securing better prices.

The reports of the Inspectors of Mines for this district have been published. In Mr. Willis's district, comprising Northumberland, North Durham, and Cumberland, there was an increase of 20 per cent. in the quantity of minerals raised in 1880 over the output of 1879 the total coal raised in 1880 being 15,606,849 tons, and 13,167,369 tons in the preceding year. In 1880 the number of persons employed in the mines was 38,030, and in 1879 it was 36,688. There were in all 60 fatal accidents in this district. In Mr. Bell's district, comprising South Durham, Westmoreland, and the North Riding of Yorkshire, there were 76 fatal accidents, resulting in 242 deaths. There were also 18 fatal accidents in the Cleveland iron mines. These figures show an increase of 22 fatal accidents in the coal mines and 186 deaths as compared with 1879, the great increase in the fatalities being owing to the explosion at Seaham, which alone caused the death of 164 persons. In the entire district 20,994,720 tons of coals were raised last year, against an output of 17,155,383 tons in 1879. There were 6,441,783 tons of ironstone raised from the Cleveland mines, as compared with 4,714,535 tons worked in 1879, while the number of persons engaged underground in the district increased from 45,779 in 1879 to 59,329 in 1880.

The Cleveland iron production for the first six months of the present year gave good ground for the belief that the total production of pig-iron in the Cleveland and Durham district will be close upon 1,356,000 tons, or on the average of 226,000 tons monthly. This is 100,000 tons for the half year above the average of last year, and is the highest output that has been reached in any district in the world in that period. The increase, however, is more remarkable in the production of iron from imported ores than from the ores of Cleveland. Should the rate of production be continued for the remaining months of the year the output may be expected to reach the unprecedented total of 2,750,000 tons, or just about double what it was in the prosperous times of ten years ago. The increased activity in buying iron reported from other districts has had a good effect on the iron trade of Cleveland and Durham. There has also been some improvement in prices, and this is encouraging so far as it goes. Rates are, however, still low, and are likely to continue so. Shipments are expected to be good during the next month, but there is not much chance of stocks being reduced. The quotations of sellers are firm at 37s. No. 3. Connall's stock stands at 176,625 tons, an increase on the week of about 890 tons. It is expected that some furnaces will be blown out shortly. The manufactured iron trade has shown a better feeling. Buyers have come forward much more freely. The ship-building trade keeps brisk, and there has been more enquiry for ship plates, both locally and for Scotland. There is little change in the rates of this kind of iron. Prices do not rally much. Bars are 5l. 10s., angles 5l. 7s. 6d., ship-plates 5l. 17s. 6d. to 6l., boiler plates 6l. 17s. 6d. to 7l. Some small orders are reported for

steel, but there is already a large extent of work in hand at the different works. Some more foundry work has been received. The coal and coke trades, with few exceptions, are rather quiet. Coke is 10s. 6d. to 11s., delivered at Middlesbrough.

At Seaham Colliery the workings were suspended on Saturday, and the removal of the stoppings in the Maudlin seam commenced with preparatory to the openings of the workings, where 28 bodies of the men killed by the explosion in September last still remain. On Friday a series of interesting experiments were made with the Fleuss patent noxious gas apparatus. The inventor has also a diving apparatus, of which the present invention is a modification. This invention enables the wearer to breathe and work in the midst of the most noxious vapours, being entirely independent of the outer air. The apparatus is of knapsack shape, and slung on to the back by cross-belts. There is also an india-rubber bag worn on the breast, and communicating with the knapsack by tubes. At the bottom of the knapsack is a cylinder containing oxygen gas under pressure, and sufficient for four hours use. The upper part of the knapsack contains the filtering medium, which absorbs the carbonic acid gas as it is exhaled by the wearer, and this by absorption becoming purified air, is conducted by the tube before mentioned to the air bag worn in front, and meeting with its complement of oxygen on the way, it is ready to be again inhaled in the form of pure air. This process goes on repeating itself at every expiration and inspiration until the supply of oxygen is exhausted. The apparatus can be recharged at a very short interval of time, and operations continued as hitherto. On Friday Mr. Fleuss conducted the experiments, and instructed the officials and workmen in the use of the invention. It is intended to use several of the apparatus in the exploration of the Maudlin seam, and Mr. Fleuss will join the first exploring party. On Friday the experiments consisted in the men equipped with the apparatus being shut up in an air-tight wooden chamber, which had previously been filled with fumes from a cauldron of burning sulphur. The experiments were considered to be very satisfactory. The inventor has also a safety-lamp to be used under water or in mines, and this lamp will also be used in the explorations in the Maudlin seam. The lamp is a modification of the lime-light. Active preparations are now in progress for the opening of the seam. The opening of workings after an explosion, especially when they have been closed for a long period, as in this case, is always an arduous and dangerous task, and the employment of the apparatus of Mr. Fleuss will no doubt greatly facilitate the operation, and also contribute much to the safety of the agents and workmen employed. On Tuesday considerable progress had been made, the men having penetrated a few hundred yards into the workings. There are many falls of roof, but no traces of fire have yet been discovered, and it is not expected that any bodies will be reached for a few days.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

June 30.—This week forge coal is selling rather better, but furnace fuel is without any improvement. Domestic coal also is dull; still, this is only to be expected seeing we have reached Midsummer. Cokes are quiet. North and South Wales common sorts delivered in South Staffordshire are priced at 14s. per ton, and South Wales best 16s. 6d. to 18s. 6d. Derbyshire makes are 15s. to 15s. 6d., and Durham (the best quality upon the market) is 20s. 6d. to 23s. 6d. Pig-iron was to-day in Birmingham quite as strong as last week; indeed, a 2s. 6d. advance was obtained on some imported qualities which could not command the rise at the date of last report. Vendors of Derbyshire pigs reported sales at 2l. 5s., and Northampton sorts in exceptional instances got the same figure as a maximum. Native all-mine sorts varied from a little less than 3l. to 3l. 2s. 6d. and 3l. 6s. In finished iron, sheets and hoops still held the front position alike as to demand and firmness of price. The galvanisers continue to take large lots of the former. Singles were firm at, for prompt delivery, 7l. 15s. Tin-plate makers reported a fairly active demand, but at prices still low.

The sliding scale under which the Cannock Chase miners are now paid will have run out on August 12 next, after a duration of two years. The men affected by it have drafted another, more favourable to themselves. It recommends that the average price of 10s. for deep and narrow coal, which gives them 2s. 3d. per stint, be lowered to 9s., and that instead of the minimum being fixed at 2s. 3d. it be raised to 2s. 6d. per stint. Allowance coal as at present.

The thin coal miners of South Staffordshire have at last definitely decided to start a mutual insurance scheme instead of putting themselves under the Employers' Liability Act. The thick coal men are still hesitating. The danger of their work has always secured the privilege of help in case of need without the necessity of contribution toward it. The system of periodical payment is, therefore, new to them.

The remarkable deposit of coal under Cannock Chase, which lay so long unnoticed and unknown, has proved to be of great extent and thickness. Among the more recent companies whose enterprise has developed the mineral wealth of the Chase the Fair Oak Colliery Company stands prominent. Their works have been considerably increased during the last few months. A year ago 300 tons was the maximum daily quantity, but with additional machinery and improved ventilation 1200 tons per day can now be raised and loaded into trucks. The quality has improved as the works have been opened out, and it is now equal to any in the Cannock district. Quite recently the deep coal seam of house fire fuel has been proved, and found to be identical in position and similar in quality to the celebrated Brereton coal found in the Earl of Shrewsbury's collieries, which adjoin those of the Fair Oak Company.

TRADE IN SOUTH WALES.

June 29.—The electric light has been introduced at the new dock excavations at Swansea, so as to enable the workmen to proceed more rapidly with the work. About 500 men are employed at night, and the Brush system, so far, has given complete satisfaction. At the Tir Pentwyn Colliery, near Pontypool, the coal was reached on June 25, and a 3 ft. seam, with an excellent rock top, laid bare. The Ebbw Vale Company have just published their report, which shows that although 75,688l. 6s. 8d. has been earned in the year ending March 31 last, the directors do not deem it advisable to declare a dividend until the bank balances are wholly extinguished. At a meeting of the sliding scale committee, held at the Royal Hotel, Cardiff, on Tuesday, to receive the report of Messrs. Routh, Kirk, and Co., of Leeds, relative to the price of coal f.o.b. at Cardiff, Newport, and Swansea, for the first four months of the present year, some objections were raised by the representatives of the men, and the meeting was adjourned until Saturday, July 2, when the points in dispute will be fully discussed. The sale of the Gelliger Colliery plant, in consequence of the exhaustion of the coal, took place last week, and the material fetched excellent prices. There were buyers present from all parts of England and Wales. The tin-plate trade remains in the same unsatisfactory condition, and some of the men who went in have turned out again in consequence of being unable to obtain a satisfactory statement of the terms upon which they are expected to work. The steam coal trade keeps extraordinarily active, and prices in most instances have a tendency to advance. The large amount of 132,337 tons were reported from Cardiff last week, while Newport and Swansea show similarly satisfactory amounts. Of patent fuel there was exported 2320 tons, and pitwood was imported to the extent of 3274 tons French, and 1240 tons from other places. The subject of coal dust and its influence upon loss of life in the workings is being discussed here with much interest. Mr. Galloway, who has made himself facile princeps in the question, is a resident in this district, and his practical knowledge is entitled to much weight. When we consider that the South Wales coalfield is more fatal to the avocation of the collier than any other district, it is but natural that any suggestion which tends to the abatement of danger will be received with attention. The plan of laying on pipes in the workings, from which water can be pumped at stated periods, is worthy of consideration, and may have its beneficial influence. Colliery warnings are now issued to managers when the condition of the atmosphere is threatening, so that that forms another safeguard to the miner. The

perils of insufficient ventilation are great, and some managers have been fined for not providing a sufficient quantity of air. The reckless miner who insists upon taking pipes and matches into the workings is another source of peril, and few weeks pass without a batch of them being hauled before the magistrates and fined. It is the opinion of the inspectors that no naked lights ought to be used in such fiery mines as those of the South Wales district, and yet we find that such is still the case, as the men declare that they cannot obtain enough light with the safety-lamp. It is manifest that only by the vigilance of all parties concerned can the danger which surrounds the occupation of the miner be lessened, and it is only, therefore, by a joint determination of both masters and men to enforce every necessary precaution that we can hope to reduce the loss of life to a minimum.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

June 29.—The new railway connecting the Penybont Terra Cotta and Red Brick and Tile Works of Mr. J. C. Edwards was opened last Saturday, when the first train, containing 43 loaded trucks, left the works. Of this number 31 trucks were loaded with goods for the Gold Coast, to the order of the Colonial Government; the whole train being loaded and sent off within 12 hours. The coal trade of the district is quiet, but the stone trade and others connected with building operations have improved lately. The breaking down of a viaduct on the Bala Festiniog Railway delays the opening of this line, which it is expected will open up new markets within the large districts traversed by the Great Western Railway system for Merionethshire slates. For Sopwith, in last week's report, will the reader please substitute Lapwith.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

June 30.—There has been a little improvement in the business doing in Derbyshire pig of late, with rather more firmness as regards prices. Still the demand has not kept pace with the production, and stocks have not declined. A good deal of what is made is used up at several of the foundries and mills, for which purposes it is not to be excelled. The greater part of the ironstone comes from Northamptonshire, and if selected it can be converted into iron of the most excellent quality. At the foundries a moderate trade is being done in gas, water, and steam pipes, as well as in some descriptions of machinery. The mills are still comparatively quiet as regards merchant iron as well as in other qualities. Steel rails are in as good request as ever, so that the one place in Derbyshire where they are made continues busy, although there is a considerable rate to be paid to reach any of our seaports, for a good deal of what is made is for shipment. As in all other districts, the demand for house coal is still of a limited character, and prices below the paying point. Good Silstone coal at the pits is only about 7s. 6d. per ton, and other qualities can be obtained at from 6s. to 6s. 6d. per ton. To London something like an average quantity for the season has been forwarded from Clay Cross, Eckington, Grassmoor, Blackwell, and several other collieries, for Derbyshire supplies nearly half of all the coal that enters the London market by railway. The charge to the London consumers, however, is now about 1s. per ton higher than it was in the corresponding period of last year. This is not felt by the colliery owners, for the merchants are those who fix the price, and of course make a profit more or less, whilst the mine owner suffers a loss. The only remedy for this is the concert of the colliery proprietors, who, by acting together, and selling direct to consumers instead of the middle men, would make it much better for themselves and advantageous to their customers. Steam coal has gone off better of late, this being the busy season for it, but prices are still unremunerative. A fair quantity, however, is consumed at the local blast furnaces, for most of the ironworks are connected with the collieries that supply the fuel. Gas coal, engine fuel, and slack are in but moderate request, more especially as regards the former.

In Sheffield business is perhaps better than it was, so that nearly every branch is favourably off. The mills have been running well, and at the Atlas Works it has been found necessary to put on an extra number of hands. One of the most interesting features connected with the town is the position it now enjoys as regards the new type of armour-plates, the production of which is confined to the town, and for which there are two patents, so that competition would appear to be out of the question. The welding of steel on to iron is a process that has not been previously attempted, but it has been in the highest degree successful, as shown by the experiments that have been going on for a considerable time past at Portsmouth. Steel is also come into more request than ever for ordinary shipbuilding, as well as for marine and other boilers. Ordinary iron plates, however, are in steady request, and there is a fair business doing in merchant bars. The Bessemer works continue as busy as ever, more particularly in rails, and prices appear likely to improve, for they have been anything but good for a considerable time past. Other descriptions of railway material are in steady request.

Most of the cutlery houses are now working well, for some rather heavy orders have been placed for table and other knives for the American market, and rather more is being done on home account for secondary qualities. Sheep shears have of late been shipped in large quantities, whilst makers of files, saws, edge tools, and scissors have been well employed. The weather being now favourable for building operations there has been a better run on stoves, grates, sashes, and ordinary castings required by builders. Cooking ranges have also gone off better, and the same may be said with respect to ornamental castings.

In South Yorkshire the coal trade is comparatively quiet, not much being done in the "softs," which sell at a rate which, as a rule, causes a loss. Steam coal goes off well enough, this being a busy time for shipments from the Humber ports to the Baltic; but prices do not move upwards as they ought now to do. Gas coal is still in but moderate request, but there has been some little improvement as regards engine fuel. A long row of coke ovens belonging to the Thorp's Gawber Colliery Company (Limited) has been stopped, the affairs being in liquidation. At the Denaby Main Colliery the men were thrown out of work for a day or two in consequence of the pony drivers striking on the wages question. This shows the necessity for the adoption of machinery for underground haulage, and it is quite probable that the result of the strike will be disastrous in the long run to the strikers.

The Dodworth Silstone Colliery, now in liquidation, has been closed. It is, however, rumoured that it has been taken by a well-known company. The probability, however, is that it will revert to the founders of the company—well-known Manchester capitalists.

PREVENTION OF BOILER EXPLOSIONS.—The report of the chief engineer of the Boiler Insurance and Steam-Power Company for the year just closed is now printed (Manchester: John Heywood), and contains a considerable amount of information. It appears that during the year no less than 2895 boilers were proposed for insurance, being an advance of 840 over the previous year, 1015 over 1878, and being, in fact, the largest number proposed in one year since the commencement of the company. In addition to the ordinary inspections 13,071 thorough or internal examinations and hydraulic tests were carried out, a number which has not been approached in any previous year. Only one serious collapse of flue occurred, and not one explosion, fatal or non-fatal, for which the company were liable took place, although over 20,000 boilers were under supervision during the twelve months. Upon the question of governmental and private inspection Mr. McDougall appears to entertain the same views as other authorities, that there can scarcely be too much inspection, but that it should be independent, and not in the hands of Government officers; and as he was an Admiralty Inspecting Officer before he took the chief engineership, he can probably speak conclusively as to the nature of governmental inspection. He says that, looking at the experience of this company alone, it is quite evident that the general adoption of independent inspection of boilers coupled with insurance throughout this country would lead to a very great diminution in the number of accidents. The passing of the Employer's Liability Act has now brought home to a large number of boiler owners a sense of responsibility which they were previously un-

able to appreciate, and it has also shown them the importance of being provided in case of accident with independent testimony as to the strength and condition of their boilers. One effect of this Act will no doubt be to considerably extend the operations of the insurance companies; and however much the opponents of the principle of insurance may regret this, there can be no reasonable doubt that the result will be an improvement upon the present state of things. If additional legislation be really necessary at all, all experience, in his judgment, goes to show that it is to the enforcement of efficient periodical inspection of boilers by independent persons other than Government officials that attention should be directed. The volume is amply illustrated, and contains the revised French boiler laws, which will be of interest to a large number of readers.

MANCHESTER GEOLOGICAL SOCIETY.

The concluding meeting for the present session of the members of the above society was held on Tuesday at Manchester—Mr. JOSEPH DICKINSON, H.M. Chief Inspector of Mines, occupying the chair.

AUTOMATIC RECORDER FOR REGISTERING THE VENTILATION OF MINES.

The CHAIRMAN, prior to the commencement of the ordinary business, remarked that in his annual report for last year, which had just been made public, there was a paragraph calling attention to the need of an automatic or self-registering apparatus for recording the periodical revolutions of ventilating fans, and the weight of the water gauge at mines, the subject having come formally under his notice, and been represented to him when assisting in the investigation of the Risca explosion last summer, as well as from instances which he afterwards found in going into the matter in his own district. The making of such instruments, he was happy to say, had been taken in hand by Mr. Casartelli, of Manchester, and Messrs. W. H. Bailey and Co., of Salford, and he found by a letter which he had just received from the latter firm that Messrs. Bailey had recently sent one such instrument, called a clock recorder, to the Townley Collieries at Burnley.

Mr. DICKINSON then exhibited a drawing of the appliance, which it may be added is a modification of Messrs. Bailey's well-known clock recording apparatus, and consists of an eight-day clock, which drives a drum about 8 in. diameter, to which is attached a paper divided into all the hours of one week. As the drum revolves the fluctuations of the air passing through the mine are recorded upon it up to 6 in. of water column pressure; the speed of the engine when the fluctuations occurred is also recorded upon the drum by means of a prick, which punctures a diagram once for every 5000 revolutions of the engines connected with the ventilating apparatus. There is thus given in a concise form the speed of the engines and the fluctuations of the air pressure for every hour during the week's work. Mr. Dickinson added that if desired there would be no difficulty in constructing a modification of the instrument, which would show also the fluctuations of the atmospheric pressure. He hoped to see instruments such as these become general at all collieries where ventilating fans were in use.

PEACE'S MINE ANEMOMETER.

Mr. WALTER EVANS exhibited and explained one of Peace's Anemometers. This, he stated, was an indicator, invented by Mr. Wm. Peace, of the Haigh Colliery, Wigan, for indicating the velocity of air currents in downcast shafts, and consisted of an ordinary balance beam poised on knife edges, and carrying a toothed quadrant working in a pinion on the pointer shaft. The instrument, he added, was invented 20 years ago, but had not been generally used.

Mr. SMETHURST said the instrument might work very well when the temperature was always the same, but in this country, where the temperature changed so suddenly, he did not think it would be found very reliable. The CHAIRMAN observed that the fact that the instrument had been before the country for nearly a quarter of a century, and had not been adopted, might, perhaps, be taken as an answer as to its adaptability for the purpose for which it had been designed.

THE "FAULTS" IN THE LANCASHIRE COAL FIELD.

Mr. C. E. DE RANCE, F.G.S., read a paper prepared by himself and Mr. J. B. Squire, A.Inst.C.E., on "Geological Notes and Specimens obtained from the Patricroft and Monton Drainage Works." He said the important system of north-north-westerly faults, which ranged across the Lancashire coal fields, were too well known from the labours of Messrs. Binney, Dickinson, and Hall to require any general description, and their economic influence in separating the district into definite coal belts, and their influence on the flow of underground water in the coal measures, was well understood. The district which was the subject of the present paper was situated on the edge of the coal field at Monton, near Patricroft, between two faults of the system, and both with easterly downthrows. The eastern or Irwell valley fault could be traced 25 miles, from the banks of the Ribble to the Irwell at Hulme. It crossed the trough of the lower coal measures at Fennisowles, west of Blackburn, east of Halliwell; it threw up the gannister series in the west against the Bolton four-foot and ten-foot coal seams, following the valley of the Croai to Farnworth; it threw the Arley mine measures against the Worsley four-foot mines, the throw here being equal to the whole thickness of the middle coal measures. From Kearsley to Pendleton, by Clifton and Pendlebury, the easterly downthrow had been the means of preserving from denudation the triangular tract of New Red Sandstone lying between Salford, Ringley, and Cheetham Hill, the base of the red rocks being thrown back by the horizontal displacement of the fault. The western or Worsley fault could be traced in the Worsley four-foot coal measures to Monkton, where it threw in the upper part of the pebble beds of the North Red Sandstone against the coal measures lying probably about 300 yards above the Worsley four-foot coal, overlaid by the Permian Sandstone, underlying marls with limestone bands. The strike of the Permians did not precisely correspond to that of the underlying coal measures, different horizons of the latter being overlaid by the Permians. In Monton Green a third fault occurred, which was known as the Monton fault, and was represented on the Geological Survey Map as commencing west of Swinton, and ranging south through Hazelhurst Green by Worsley Workhouse, south of which its course was drawn as doubtful, but was represented as crossing Monton Green, and terminating in the Worsley fault. The excavations which had been made by the sewage works proved the Monton fault to fall into the Worsley fault at a point further north than represented on the map. Both faults had an easterly downthrow, and the fault ranging fr. in Monton south through Eccles might be regarded as a combination of the two. The reader of the paper then gave a number of details which had been collected in the tunnels and shafts during the progress of the sewage works, which were illustrated by diagrams and a number of rock specimens.

A vote of thanks having been passed to Messrs. De Rance and Squire for their papers, the CHAIRMAN remarked that it had been observed by many old people in Lancashire and other parts that along the lines of great faults there was frequently a slight difference in the temperature, and by the dew point early in the morning. They had often been traced out on the surface before they were discovered underneath.

Mr. DE RANCE suggested that this question might form a matter of interesting investigation to members of the society in different districts. The CHAIRMAN thought that this alleged tracing out of the faults by the dew points might very probably be on a par with the old system of discovery by the divining rod, and that they had been traced out after they had been discovered in some other way.

THE USE OF BLASTING POWDER.

The paper which Mr. W. SMETHURST (Bryn) read at the February meeting, on "Explosives used in Mining," was again opened for discussion.

The CHAIRMAN said that before the discussion was resumed he might state that a very important opinion had recently been given by the Attorney-General and the Solicitor-General with regard to the construction of a part of the eighth general rule in the Coal Mines Regulation Act, 1872. It would make no difference in this district, because they had always taken the view which these two learned gentlemen now held; but it would make an important difference in several districts where that view had not been held and practised. One of the great objects of the water cartridge with which Mr. Smethurst had been making experiments was to prevent the spread of flame and the ignition of fire-damp; and the great object of that part of the rule on which the law officers of the Crown had given

their opinion was that, in the event of a mistake being made in a fiery mine, and a shot being fired which spread flame by the presence of fire-damp, and perhaps coal dust, the consequences should be lessened as much as possible by having no one in the mine except those persons who were engaged in blasting operations. The high legal opinion to which he had referred was as follows:—"A case having recently been submitted for the opinion of the law officers of the Crown as to the interpretation of the requirement in section 51 of the Coal Mines Regulation Act, 1872, making it obligatory on the persons ordinarily employed in the mine to be out of the mine when gunpowder is used under the circumstances specified in the rule, the Attorney-General and Solicitor-General have given it as their opinion that the terms 'persons ordinarily employed in the mine,' in section 51, would include the night shift, consisting of labourers engaged in making ready the mine for the mining operations of the miners constituting the day shift, so as to make it obligatory for the persons employed in the night shift to be out of the part of the mine when and where gunpowder is used under the circumstances already referred to. They think the distinction intended to be drawn is between those ordinarily employed in the mine in whatever capacity, and those specially employed in the blasting operations." The effect of water cartridges might still be equally important to the men who had to perform the blasting. He believed the practice at Mr. Smethurst's pits was to have only in the mine at the time of blasting the persons who were actually engaged in the shot firing.

Mr. SMETHURST said that was the case in the six-feet, the gas there being so fiery, and scarcely showing a "cap" in the lamp.

The CHAIRMAN said that in the eastern district of Scotland, where great explosions had taken place, and also in South Wales, the view had not been held as now laid down by the Attorney-General and the Solicitor-General; but for the future the rule would have to be carried out as they interpreted it, and if any coal owner did not adhere to it the matter would have to be tested at law and carried to the higher courts. Mr. Smethurst's experiments would still be of use; and at the same time it must be borne in mind that there was another clause in this powder rule which prevented powder being used at all if it was not safe to use it. But, as he had said, lest a mistake might be made, the number of persons in the mine when blasting was being carried on must be reduced to a minimum.

Mr. PENMAN asked if Mr. Dickinson meant to say that in South Wales they thought they had a right to fire shots when the timberers were in the mine? The CHAIRMAN replied that both in South Wales and the East of Scotland it was considered that it was only the colliers who were comprised under that part of the rule applying to those who had to be out of the mine when shots were being fired. The opinion of the law officers of the Crown, however, was very clear. It was what he had held to be the law in his district since the passing of the Coal Mines Regulation Act in 1872, and he had not found a single colliery proprietor who would fight the question. In his district they had taken his interpretation of the rule.

Mr. SMETHURST, in answer to the Chairman, said that in the experiments he had made with water cartridges he had used 3 ozs. of dynamite safely, but 3½ ozs. would make it unsafe. There was no doubt of the success of dynamite, fired by electricity, with a detonator, but with the employment of powder he thought it would be throwing time away. The use of water cartridges would no doubt cost more money. In all his experiments he found it did not lessen the quantity of powder. He could not do with less explosive power; the only difference was that the action was not so sudden, and the coal was brought down in larger lumps.

Messrs. PENMAN, BURROWS, and G. WILD made some remarks on the subject; and one of the honorary secretaries (Mr. J. S. Martin) read a communication which he had received from Mr. James Ashworth, of the Mapperley Colliery, Derbyshire, who, among other things, stated—"The danger that I most fear from the use of gunpowder, or any explosive, is that arising from detonation, for I believe that under certain conditions the air of a mine is and can be detonated either by gunpowder or other explosive, and that fire is thereby communicated to places where there may be an accumulation of gas. If Prof. Abel or some other gentleman competent to explain detonation would give a clear exposition of this phenomenon, I have no doubt the mining profession would be indebted to him. I see that it is argued that the use of the water cartridge adds to the force of powder, but no direct reason is given for this; to me the matter appears only a question of leverage. I consider that the only safe mode of blasting when gunpowder is used is to use the very best powder, fired by means of an electric spark and a detonator."

The CHAIRMAN said that with the enforcement of the rule requiring labourers who were not necessary for the blasting operations to be out of the mine when such operations were being conducted would really lessen the number of lives lost in explosions. In some of the districts to which he had referred they had been having from 20 to upwards of 100 persons in the mine when blasting operations had been going on at night, and they had been contending that they were within the law in doing so, although many of the men were not really required to be there for the purpose of blasting. Anyone who resisted the law now would have to fight it.

Mr. SMETHURST: I do not think the opinion of counsel is known.

The CHAIRMAN said the opinion was new, and it had been taken in consequence of the diversity of opinion and practice in the different districts. One practice would have to be adopted for the future in this respect in fiery mines—that was in mines where the issue of gas was such as to show in the lamp.—After some further discussion the subject dropped, and the proceedings terminated.

MANCHESTER STEAM USERS' ASSOCIATION.—At the monthly meeting of the executive committee, held at the offices, Mount-street, on Tuesday, Mr. Charles Heaton, Bolton, in the chair. Mr. Lavington E. Fletcher, chief engineer, presented his report, which stated that from May 28 to June 24 inclusive 565 visits of inspection were made and 971 boilers examined, 479 externally, 19 internally, 6 in the flues, and 467 entirely, while in addition six boilers were tested by hydraulic pressure. Two of these tests were applied to boilers that had been already in use, to ascertain their fitness for the pressures proposed to be carried; while in the other four cases the boilers were new ones, and were not only tested by hydraulic pressure but also specially examined both as regards their construction and completeness of fittings before leaving the maker's yard. During the above period the following defects have been met with:—Furnaces out of shape, 2; fractures, 12; blistered plates, 9; internal corrosion, 12; dangerous, 1; external corrosion, 23; internal grooving, 19; pressure gauges out of order, 38; boiler without feedback pressure valves, 1; total, 115 defects, 1 dangerous.

THE GLASGOW PORT WASHINGTON IRON AND COAL COMPANY.—As the result of the recent meeting of this company, when the directors and a body of the shareholders came into conflict, a movement has begun amongst the latter to institute proceedings against the directors upon the ground that "the Port Washington properties are still the properties of the original directors, who are still the unlimited liability trustees of the shareholders for the full share capital of the company deposited with them, to be now accounted for according to the law of trusteeship."

BRISTOL MINING SCHOOL.—At the closing meeting of the session, on June 23, Mr. Thomas Coomber, the head master, was enabled to make a very gratifying statement concerning the work of the institution. There were six students who would not return next session, and it might be interesting to mention the direction in which the training they had received there had found employment. Mr. David W. Evans, of Cwmtyrch, near Ystalyfera, has taken his Government certificate as mining engineer, and is engaged as assistant with Mr. Hay, the eminent consulting engineer, of Brynamman. Mr. Thomas M. Brown, of New Cumnock, Ayrshire, has also taken his Government certificate as mining engineer, and has received the appointment of sub-manager of New Cumnock Collieries. Mr. Howell Thomas, of Swansea, has received the appointment of sub-manager of calcining furnaces and zinc mines belonging to Messrs. Richardson, of Swansea, at Clusone, near Beryamo, in Italy. Mr. John Evans, of Pontypridd, has received the appointment of sub-manager at the Harris Navigation Collieries, Treharis, near Pontypridd. Mr. Wm. Bevan, of Derby, has already sailed for New Zealand, intending to seek

engineering employment there. Mr. Wm. Meredith, of Brynmawr has not yet received an appointment. During the year two of the students have been diverted from an industrial career by academical successes. Mr. Ralph Bodey, in November last, won a scholarship at Trinity College, Oxford, of 80*l.* per annum, for five years, for success in chemistry, physics, and mathematics; and during the present month Mr. Wm. Littleton has taken a scholarship at University College, Oxford, with the same subjects, for the same period, which we compute to have the value of about 85*l.* per annum.

Meetings of Public Companies.

CAPE COPPER MINING COMPANY.

The ordinary general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Monday.

Mr. EDMUND A. PONTIFEX in the chair.

Mr. J. C. LEAVER (the secretary) read the notice convening the meeting. The report and accounts were taken as read.

The CHAIRMAN said—Gentlemen, before reviewing the operation of the company for the past year I trust I may be permitted to express, on behalf of my co-directors, and I am sure, of all the shareholders, the great regret which we have felt at the loss by death since we last met of our old and valued colleague, Mr. John Taylor. In heriting with his brother the traditions of his distinguished father, he, during a long career, sustained a reputation for spotless integrity and honour. Out of the fund of information at his disposal he was always ready to afford instruction and assistance to anyone who sought it from him, and while in his social capacity he has left many friends to regret his loss, I feel sure that he had not left one single enemy. (Applause.) Coming, now, to the operations of the past year, it is satisfactory to find that a very large increase of profits has been made, notwithstanding that the price realised for our produce has been lower than in the preceding one, and also that the assay has been somewhat lower. The average Swansea assay for the year 1879 was 30½ per cent., and the average assay of the ore for 1880 was 29½ per cent.—a deficiency of 1½ per cent., but this deficiency under the peculiar circumstances is not much to be regretted, because it arises from a cause irretrievably altogether of the richness of the ore from the mines, which I shall have to speak more fully about presently. The average price obtained for our produce was in 1879, 12*s.* 3*d.* per unit, and in 1880, 12*s.* 1¼*d.*, a falling off of 1½ per unit, which upon our out-turn makes a considerable sum; but in face of these two drawbacks we have still been enabled to increase our profit from 89,222*l.*, as it stood in the year 1879, to 111,870*l.* in 1880, an increase of profit for the year of 22,648*l.* This very largely increased profit is, however, almost entirely due—I think I may say it is entirely due—to the cause to which I just now alluded, which has resulted in some diminished quantity of ore, but this has been more than made up for by the very large quantity of ore we have been enabled to treat from what we call our "surface reserves"—that is to say, from the accumulations of our poor ore in past years, which our then arrangements for dressing and of machinery did not enable us to deal with, unless we had thrown aside the more valuable and richer portions of our raisings. I mentioned at our last meeting that we had spent about 5500*l.* in increasing our dressing floors and dressing machinery, and this expenditure has enabled us to bring to market out of these poor reserves quite 2000 tons of about 30 per cent. ore, and, of course, largely increasing the returns, although slightly diminishing the assay, and yielding an addition of fully 20,000*l.* to the profit which we should have earned. That expenditure of 5500*l.* has, therefore, been amply justified by the results. We have sufficient of the same class of reserve to continue to yield at about the same rate for, perhaps, about another 12 months, and after that we have considerable quantities of other and poorer produce, which we shall be able to treat as an addition to the ores we treat from the mining, which will also continue for some time longer to increase our profits. As the quantity of ore to which we have added amounts to something like one-seventh of our total quantity of ore brought to market, and as this one-seventh had already had the cost of raising it defrayed out of previous years' costs, it, of course, has had the effect of very much reducing our total costs per ton for the year; and this renders it impossible for me to compare the results of the working of the past year with those of the preceding one so minutely as I usually do. Separating, however, as nearly as possible the costs incurred in the mining, it results that the mining has cost about the same as it did in the previous year—about 3*s.* 2*d.* per unit, or perhaps a penny or so more; still the cost of mining remains very exceptional.

The effect upon our total costs of bringing this large quantity of ore to the market, and of raising it to market has been to reduce the total cost very much. It amounts to a reduction from 7*s.* 1*d.* per unit in 1879 to 7*s.* 6*d.* per unit in 1880, a reduction of 7*d.* per unit on our total produce, and that multiplied by our total raisings amounts to a saving of something like 13,500*l.* on the year. The combined effect of these 2000 tons of dressed ores in diminishing the total costs and increasing the total returns has been, as I have mentioned, to raise the profit from a little over 89,000*l.* to nearly 112,000*l.* Of course we cannot expect, as I said before, to continue this large increase beyond the next year or two. That being so, we felt it proper to treat this exceptional source of income in a somewhat exceptional manner. We have again added, as you will see by the directors' report, very largely to the various sinking and reserve funds. Our mining prospects for the future at Ookiepare about the same as they were last year—that is to say, we are in somewhat the same position as a man drawing pretty freely all the year on his banker, and finding at the end that his balance has not been reduced, which is not a very disagreeable position to be in. It is also satisfactory to find that our other mine of Spectakel continues gradually to yield more productively. In 1879 it produced 77 tons, and in 1880 it was increased to 737 tons, and in 1880 we have raised 1163 tons. The result has been that whereas in 1879 we made a loss on Spectakel of 560*l.*, in 1880 we made a profit of 5000*l.*; this profit is to some extent a paper one—that is to say, it has not yet actually been put into our pockets, because, as you are aware, we have no branch railway to Spectakel, and we are, therefore, dependent on the transport of the country, which, since our railway has been in operation, has almost ceased to exist. The result has been that very little of the ore of Spectakel have hitherto been brought to market, but we have lately reorganised the transport service from the nearest station on the line to Spectakel, and we hope now that all the raisings will be regularly brought forward. Nababep, our third mine, continues to disappoint us, and I think we must look forward to a very early discontinuance of operations there. We have tried it in every direction, and although there is enough ore to be very profitable if the mine were situated here in England, out there I do not see any sufficient prospects to induce us to continue operations. You will remember that at our last annual meeting a suggestion was made in regard to Springbok, and we undertook to re-open that abandoned mine. It had never been worked before, but was worked previously to 1863 (when we purchased the property), and yielded very brilliant returns to the previous proprietors; but they came on poor ground, and abandoned it. We have now commenced to re-sink, and although there is nothing to induce us at present to speak with positiveness, the prospects so far are sufficient to make us believe that we may be able to find riches there again. Coming, now, to the question of our liabilities, it might naturally be concluded that we should find a considerable reduction in them, seeing that last year we had placed so large a sum as 27,000*l.* to the credit of the various sinking and reserve funds; but, at the moment of closing our accounts, our liabilities happened to be exceptionally high, especially as compared with the previous year, when they were considerably reduced. The liabilities in 1879 were 35,815*l.*, and in 1880, 124,500*l.*, an increase of our liabilities of 38,685*l.* compared with the previous year; but this simply arose from our having at the moment an exceptionally large amount of unrealised assets. We had 13,737*l.* more money owing to us in 1880 on invoices for metal sold than in 1879, but all this has since been paid, and 40,161*l.* more money was locked up on unsold ore, all of which has since been sold, and we had about 40,000*l.* more cash in hand, so that although our liabilities were temporarily larger, our financial position was certainly no worse than at the close of the previous year, and it now will, I have no doubt, be rapidly ameliorated. I mentioned the difficulty we had in getting our ores from Spectakel because we had no branch railway from the mine, and that points to the exceeding value which we have found our railway to be. It has continued to work very satisfactorily, and we are continuing annually, as we get more experienced, to reduce the cost of transport. Seeing how completely the old transport of the country has broken down, it is fearful to contemplate what a position would have been if we had not had the boldness to make this railway at the time we did. Speaking of the cost of transport, the railway cost in the year 1879 was 17*s.* 16*s.* 8*d.* per ton—and that was a considerable reduction, you will remember, on previous years—but in 1880 it was still further reduced to 17*s.* 4*s.* 9*d.* per ton. I do not suppose we can continue to reduce it, at all events in that ratio, because, considering the difficulties of position and so forth, it is not really an unreasonable cost. The shareholders have two or three times mentioned to us the desirability of employing locomotives. As you know we did try that, and we are anxious again to attempt their use, but until we get the line into a proper position to do so it would be quite useless to attempt it—it would be throwing money away, in fact, to have locomotives until the line is relaid with heavier rails, in place of the light rails, which were all we could afford at the time that we constructed the line, and which are not yet worn out, and I do not suppose we shall be able to use locomotives for three or four years, and possibly not at all. We have only this morning received a report from the head engineer there in which he says that looking to the difficulties we have to encounter in the matter of sand and so on, he is not very hopeful on the subject. However, we are, perhaps, more sanguine than he is, and we hope to devise something by-and-by, when the funds will permit it, and the line is capable of taking the heavy weights we shall have to deal with. I think the only other matter is the smelting works. They continue to afford us all, and more than all, the advantages we expected when we went into that enterprise. The quality of the metal which we produce is indispensable, and although we are the newest smelting company in the trade, our metal stands at the top of the tree. The direct profit earned from the works has already about paid the cost of them, but it was not the direct profit we looked to of smelting a larger quantity of ores, but their direct profit we are enabled to obtain by means of them. We are now enabled either to sell the ores if we can get a fair price for them or to smelt them, and by doing what happens to be the most to our advantage at the moment, we are enabled to do the best for the interests of the company. I shall be very happy to answer any questions that may be put, and meanwhile I move the adoption of the report and accounts. (Applause.)

Mr. OSWOOD HANBURY seconded the motion, and it was carried without any discussion.

Mr. ANDERSON, in moving a proposition of which he had given notice, said that under the Articles of Association the directors were to be paid the sum of 1000*l.* a year, but that when the net profits of the company reached 15 per cent. the sum should be increased to such an amount as the shareholders in general meeting determined; but although the profits of the company had very materially increased since 1870, when the question of remunerating the board was last taken into consideration, there had been no addition made to

the directors' salaries. Mr. ANDERSON proposed that the directors should be paid the sum of 1000*l.* a year, but that when the net profits of the company reached 15 per cent. the sum should be increased to such an amount as the shareholders in general meeting determined; but although the profits of the company had very materially increased since 1870, when the question of remunerating the board was last taken into consideration, there had been no addition made to

the fees of the board. In the 10 years that had elapsed the dividends had averaged 49 per cent., while, if the additions to the various reserve and sinking funds were taken into consideration, it would be found that the net earnings had been fully 60 per cent. per annum on the average. Now, if the remuneration of the directors were proportionately increased they would receive 4000l. per annum; but he was not going to propose to do anything like that. It would be remembered that the directors with the small capital of 140,000l. had contrived to make a railway and other extensive works at the Cape, while they had introduced into this country smelting works, which must necessarily increase the responsibilities and labours of the directors. After referring to the zeal, energy, and ability displayed by the board, Mr. Anderson moved that a sum of 5000l. should be voted to them out of the balance of 12,000l. standing to the credit of the profit and loss account.—Mr. MACKENZIE seconded the motion, which was carried after discussion by a large majority, only three hands being held up in opposition to it.

The CHAIRMAN, in returning thanks, said the directors deserved some credit for having with such a small capital done so much, when they might reasonably have asked for an increased capital. Soon after the remuneration of the directors was augmented in 1870, it would be remembered that the profits increased largely, and he could only hope that the same result would follow this grateful act on the part of the shareholders. (Applause.)

Mr. HARKY proposed the re-election of the retiring directors—Messrs. John Galworthy and Adolphus Focking.—Mr. S. J. WILD seconded the proposition, which was carried.

A SHAREHOLDER asked if the directors proposed to reduce the uncalled capital, or to consider the desirability of converting the shares into stock?—Mr. S. J. WILD hoped the directors would not interfere with the present arrangements of the capital, for it was a great advantage to have something to call up in case of an emergency.—The CHAIRMAN, in reply, said the uncalled capital had been exceedingly useful. (Hear, hear.) They did not propose to make any alteration in this matter.

Mr. REYNOLDS proposed the re-election of Mr. C. T. Moore, the auditor.—Mr. EDWIN GALWORTHY seconded the proposition, which was carried.

The meeting then closed with a vote of thanks to the Chairman and directors.

ST. JOHN DEL REY MINING COMPANY.

The ordinary meeting of shareholders was held at the City Terminus, H. tel., Cannon-street, on Wednesday.

Mr. JOHN HOCKIN (the Chairman) in the chair.

The notice convening the meeting having been read, the report and accounts were taken as read.

The CHAIRMAN said: The report we now present to you gives a full account of the year's operations, and a reliable statement of the condition of the mine up to the end of April. It is well known and pretty generally admitted that the policy of the directors of this company has always been to take the shareholders into their confidence, to impart to them as much as they themselves know, and to keep back neither favourable nor unfavourable facts. We do not presume to venture on predictions, but plain honest facts are always at your service. For the last four years we have given you with the report a map showing in section the quantity of mineral removed, and the depth reached during the year, and in plan the proportion of rich and poor mineral in the stopes, so that each proprietor has an opportunity of seeing for himself what changes take place. These plans show constant changes in the composition of the lodes, though the general outlines of the walls remain pretty much the same. At page 10 of the report we give you, as usual, a statement of the profit of the year and its disposition; unfortunately it leaves nothing available to admit of our performing the agreeable duty of asking you to pass the usual resolution declaring a dividend. The cause of this absence of profit during the last half of the year is to be found in the imperative need there was of suspending in part the work of remunerative extraction of mineral for the unremunerative but more pressing work of rearranging the whole of the hauling gear. This had been so long delayed from time to time by your officers that the directors, seeing that disastrous results must follow unless the matter were taken in hand and executed at once, gave a positive order to have this work done, even at a sacrifice of profits. We wish it clearly to be understood that the directors alone are responsible for this unpleasant condition of affairs. They decided, after much deliberation, that it was their duty to submit to a present inconvenience to avoid future too probable disaster. The work has been executed in a way that does credit to the officers who had charge of its execution. Its magnitude can hardly be realised without going into some details. The old system consisted of kipples, drawn by wire rope by a surface water-wheel all the way from the stopes, first on the incline on shoots, and then perpendicular up the vertical shaft, without guides or runners of any kind. The new consists of two systems—1. Drawing by the water-wheel through the perpendicular shaft cages carrying 4 cars, travelling on guides, which prevent oscillation.—2. Drawing on the incline on kipples, travelling on runners, by an underground engine worked by air compressed on the surface, and delivering the mineral into cars, which run on rails on a still or floor, carrying them to the bottom of the shaft ready for the cages. The change involved erecting a turbine, heavy air compressor, and air receivers on the surface, fixing large heavy air-pipes from the surface to the engine, erecting the engine underground, with the necessary inclines, stull, tramways and tunnels, the whole carried on and executed while the ordinary work of the mine was being prosecuted. The hauling by it has reached 250 tons a working day, and though this rate has not been realised on an average, it is expected when the arrangements are complete for bringing the mineral from all parts of the mine to the cages that a better average will be reached. Its advantage as regards obtaining native labour cannot be overrated, whilst before its completion there was a continually increasing difficulty in obtaining labour. Now we have abundance; and, to show you how prejudice can be overcome when active results are attained, I may mention that when it was first contemplated sending the men down and bringing them up in cages we were told the Government would never allow this risk to be run. Now that it is a *fait accompli* not only do all the labourers go down and come up in them, but their Imperial Majesties, the Emperor and Empress of Brazil, were taken down and brought up from the mine by this very machinery which the prophets of evil contended would not be allowed to take down and bring up the poorest labourer. On the table are drawings which appeared in an illustrated Rio paper showing their Majesties prepared to go down, in the act of descending, and in the mine. You will have observed that the output, owing to the interruption caused by putting in this machinery, was less by 16,517 tons than last year, which, at the average yield of the year, would have given in gold 36,337l., and which would have been profit in addition to the profit shown in the mining account if we could have continued the work of extraction undisturbed. The working cost shown in the account is less by 5783l. than the cost of last year. This might have been still further reduced but for the several exploratory works which, under the condition of the lode, the directors deemed it imperative to carry on. These have led to the discovery of a promising body of mineral, but its continuation westward has to be proved before any decided opinion can be expressed as to its value. The cost of the permanent hauling machinery (13,639l. 2s. 10d.) has been carried to capital account. In the matter of the recovery of gold from the tailings no important progress has been made. Owing to pressure on the mechanics for the hauling machinery this class of labour could not be spared for experimental machinery, but the calcining furnace was completed in April, and the first experiment was made in May. The gold had not been recovered from the desulphurised sand on the dispatch of the last mail, so that no opinion can be formed as to the commercial results. We have not lost sight of this important subject. Investigations are going on in this country, and enquiries are being made in America, in the hope that some means may be found whereby a portion of the gold now remaining in the tailings may be recovered. The 4 per cent. tax question is we hope at last in a fair way of a favourable solution. The superintendent has been most indefatigable in his protests against it, and we have reason to believe that these protests have had some weight in convincing the Ministers of the importance of the subject as bearing on the mineral resources of the whole empire, for we are now credibly informed that the Imperial Government intend introducing a Bill, as a Government measure, which will place the whole of the mining regulation of the empire in the hands of the Imperial Government, free from all interference by the Provincial Legislatures. As regards the Cuibai Mine, we have stamped during the year 3826 tons of mineral, making 8706 tons stamped in all since the small 12-head stamping mill was set in motion in 1879. The average yield of this quantity of mineral, taken without selection from the lode, has been 2.4 oitavas (or 5 dwts. 13 grs. troy) of gold per ton. The yield this year has been rather better than last year, caused by an admixture of 326 tons (not quite

10 per cent. of the quantity stamped) from the Terra Vermelha lode. Pitanguera Mine, which produced an average of 6 oits. (or 14 dwts.) of gold per ton. This lode is a distinct formation from the Cuibai main lode, and lies south of it. It is being further explored west with a view to test the ground in that direction, where it is said the formation is of greater dimensions; in the part worked hitherto it is very narrow. The deep adit is being pressed on as rapidly as possible by machine driving, each month during this year showing an increasing rate. Up to the end of February the distance driven was 105 fms. 1 ft. 4 in.; March gave 12 fms. 1 ft. 6 in., and April 12 fms. 4 ft. 3 in., making in all over 130 fathoms—not far from one-half the probable distance required—which must vary according to the underlie which the lode will be found to have. The total expenditure on this property to the end of the year, including the purchase money, duty, and expenses of conveyance, has been 34,086l. 5s. 5d. The financial position of the company is stated in full detail in the report, and I think I need not trouble you with any remarks with regard to it. The Chairman then moved the adoption of the report and accounts. (Applause.)

Mr. S. J. WILD asked if it was not the case that the produce per ton had been much less lately than it was a few years ago, and what probability there was of the produce coming up again to the same value as before? He also asked whether in recent times the company had been provided with any reports on the property independent of those supplied by Mr. Pearson Morrison? He had read from time to time in the periodical statements that the reason why the produce was not now so rich as it was owing to the adoption some time ago of a very injudicious mode of working, by which the richer ore was taken away, leaving the poorer stuff to be taken away now before they could again get to the richer ore. If this were so he would ask what chance there was of getting rid of this inferior stuff, and getting back to the richer material?

Mr. F. TENDRON, in seconding the motion for the adoption of the report and accounts, thought he might give a little information with regard to the mine. With regard to Mr. Pearson Morrison, their manager, he could say that a more straightforward, truthful, or able man did not exist, and it would be a good thing for mining and engineering if there were more such men about. Nothing can be more truthful than the report which Mr. Pearson Morrison had put before them with regard to the proceedings of the company during the past year, nor than the report of the previous year's operations. When the previous annual report was received in England he (Mr. Tendron) was in Brazil, and having spent a good deal of time at and in the mines his impression with regard to the truthful, straightforward, and able character of their manager had been confirmed, and he believed that they would in vain look round for a man of equal integrity and ability. (Applause.) At present affairs at the mine were not looking so well as they could wish. At the meeting in November he told the shareholders that never in the previous history of the mine had the mineral-bearing part of the lode been so contracted as it then was, having for a length of 150 ft. only varied from 3 to 5 and 8 ft. wide; at the same time we had stated that the mineral-bearing part of the vein had widened out in the dump to 15 ft., and even a little more. Then the killas came in again, and seemed to threaten to shut the ore out of the direction. This had a great deal to do with the fact that the ore was now so contracted. It was a very unfortunate circumstance to a certain extent, though in another unfortunate. It was intended that the shaft should strike the lode in the good mineral-bearing part of it fairly eastward, so that the stoping should be continued further westward. The lode was of a moderate width at the point where the shaft intersected it, and westward the opening out yielded a magnificent body of almost pure pyritic mineral, and for 200 feet or 250 feet the valuable part varied from 35 feet to 40 feet wide. The result of this magnificent discovery was that a good stoping operation was commenced, and they were able to get up a large amount of stuff. The hauling machinery was then quite sufficient for the length which had been reached, and the returns were increased from month to month, and then followed one of the grossest errors that had ever been committed at the mine. It would be remembered that in 1874 and 1875 the profits earned were something like 160 per cent. on the capital. The error of the working at that time was seen by the board, and they endeavoured to remedy it; but it was not easy to deal with such a matter, and they were now suffering from the fact that the eastern part of the lode had not been sufficiently worked, and that the ore was now so contracted that they had now to go through the poor material. When he went out he found that the driving of the level eastward had been given up because the face of it was in poor mineral. In 1876 it was found necessary to stop the rapid sinking and the work in the western direction. A great deal of very poor stuff had been worked through, and the returns fell off very much. This was the state of things as they existed when Mr. Pearson Morrison took charge, so that he was not at all responsible for the present position of affairs at the mine. Mr. Pearson Morrison, however, had an extraordinary piece of good fortune after his arrival, the zone of bad mineral was passed through a driving westward, the mineral lying behind the killas was of a better character, and there was a very fair lode at the bottom of the mine, so that for the first year or 18 months of his management he came on pretty good times. (Hear, hear.) The zone of poor killas to which he had referred, however, instead of going down at an angle of 45° went down at a flatter angle, and greatly encroached on the good mineral, and it was hoped that the mineral part of the lode would broaden out westward, and that they would get good mineral underneath. This was hoped for two years ago, and it had given him a very fair amount of confidence that they would meet the richer part of the lode again. They had now done so, and without wishing unduly to raise their expectations, he might state that in the last report received—that for April—it was mentioned that good mineral in the eastern part of the mine was only from 2½ ft. to 3 ft. wide, but in the first stop beyond that the mineral bearing part of the lode was 35 ft. wide, with fair average mineral, and the width of the lode excavated was 12 ft. That looked very much like bearing out the supposition that this was a real intrusion of part of that slate that had been mineralised. It was difficult to know how to deal with fissures, and it was still more difficult to know how these veins were filled, whether by filtration, or fusion, or sublimation; but, so far as his reading and feeling on the matter went, confirmed by his personal examination, he was confident that their lode was the result of either fusion or sublimation. It certainly could not have come in in the form it has now, in a country which for miles round had nothing but a clay-slate soil, though there was a good deal of filtration through the joints and fissures of the clay-slates. If it were a lode that had been formed by sublimation, and it is a country free from earthquakes and disturbances, he could not conceive why they should not have a good mineral below the present workings as they had above. Comparing the last five years' results—including the past year with its poor dividend—with the five richest years that the company had—from 1862 to 1866—he thought the shareholders would be perfectly astonished at the way in which the figures had come out. During the last five years, however, the ore stamped had amounted to 62,500 tons a year, whereas in the five richest years the amount had been 63,000 tons. In the earlier years they hauled a great deal more to surface, for they rejected, on an average, 22,000 tons of the ore raised to the surface, and returned to the mine. The results of the stamping gave a yield of 7.51 oits. In the earlier five years, against 5.53 oits. in the last five years; but though they were now working at a much greater depth, the falling off of the output of gold per ton was compensated for by the diminished cost, so that it would be seen that they had earned as much in the past five years—including the past year—as in the five good years from 1862 to 1866. In the earlier years the profits were equal to 37 per cent. on the then capital, or 25 per cent. on the present capital, while for the last five years the average had been 26 per cent., and taking the whole 20 years of the time of the mine, when no dividends were paid—he found that they had paid an average of 20 per cent. (Applause.) Taking these facts into consideration, he thought the shareholders had no reason for great discouragement, and he believed that the mine had yet something good in store for them. (Applause.)

Mr. SPENCER HERAPATH asked what was the present outlook of the cross-cut which was going through a mass of fine mineral? The prospects of this cross-cut had been described as being exceedingly hopeful, but he had not seen that it had followed up. Mr. TENDRON referred to the adverse reports which had been circulated with regard to the company, and thought it should be specifically stated what the reserve fund was invested in.

The CHAIRMAN said the auditors had examined the securities, and they could tell the shareholders of what they consisted. (Hear, hear.)

Mr. S. HERAPATH said the reserve fund was invested in first-class securities, which stood at the price at which they were bought. Of course, they could not alter the prices every year to bring them to the market quotations; but the securities held by the company had been considerably appreciated during the last few years.

Mr. SCHOFIELD added that he had calculated the current prices for the securities held by the company, and he found that they showed a large profit upon the prices at which they were bought. With regard to the balance-sheet, he thought it was imprudent to have borrowed 50,000l. when they had stock which they could have sold. As to the prospects of the mine, though Mr. Tendron commenced his remarks in a somewhat desponding manner, he (Mr. Schofield) was delighted that the desponding view gradually disappeared. This was not the first time they had had disappointments, for he remembered when the produce suddenly rose from 2½ to 3 oits. per ton to 6 and 7 oits. per ton, and there was no reason, he thought, why they should not have the same results again. He, personally, was perfectly satisfied that their future prospects were very good, for not only had the produce gone up since the new machinery had been at work from 4.3 oits. to 5.8 oits. per ton, but the quantity of gold produced per diem had also been increased to the extent of about 1000 oits. a day, which would give them a profit of from 4000l. to 5000l. a month at the present rates. There was certainly no reason why the stock should have fallen so much as 60l. He held 2400l. or 2500l. stock, and he intended to keep it, for he believed it would stand at 400l. before many years were over. He thought they might advantageously employ a small steam-engine for hauling purposes, for the expense of timber for feeding it would not be large, as he knew from his experience in connection with an Australian gold mining company, of which he was the Chairman. Mr. Schofield also expressed his opinion that the depreciation in the property of the company would not have been so great if they had had shares of comparatively small denominations instead of stock.

The CHAIRMAN, in reply to the questions asked, said when he went to Morro Velho in 1856 one of his instructions was that the old mine was coming to an end, and that he was to look out for new ones. He examined other properties with the view of making purchases, but none were made, and since then they all knew what the old mine had produced. (Hear, hear.) Whether it would do so again, of course, he could not say. With regard to the cross-cut, to which Mr. Herapath referred, they had got a body of mineral to the level about 20 fms. to the west to prove whether it was a parallel lode, or simply a local and unimportant mass of mineral. The hauling had recently averaged 207 tons a day, and when they were able to get the mineral more conveniently to the bottom of the shaft than they could now—and they were driving a level for the purpose—they would be able to improve upon that amount.

The motion was then put and carried unanimously.

The retiring director—Sir John Swinburne, Bart.—was re-elected, and Messrs. Spencer Herapath and George Austin were re-appointed auditors. The CHAIRMAN, in reply to Mr. STAUTON, stated that with regard to the litigation at Cuibai their legal adviser, who was the first man in the province told them that they had no cause for fear at all. They knew the persons who had written the letters attacking the company, and the object with which they had been written. There was not a word of truth in the statement made with regard to the payment of the blacks. He had in his possession letters from both the letter writers which would convince the shareholders of the reason for which the attacks were made.

Mr. SCHOFIELD added that he had in his possession some letters from "Verdad," whom he considered a vulture rather than a partridge. (Laughter.) Votes of thanks having been passed to the Chairman and directors, and to the manager and officers at Morro Velho, the meeting closed.

LONDON AND JAGERSFONTEIN DIAMOND MINING COMPANY.

The first ordinary general meeting of shareholders was held at the offices, Hatton Garden, yesterday.

Mr. MARTIN LILLENFELD in the chair.

Mr. J. O. STATHAM (the secretary) read the notice calling the meeting.

The report, which was taken as read, was as follows:—

In compliance with the provisions of section 45 of the Company's Articles of Association, your directors have asked you to meet here to-day for the purpose of laying before you a report of their stewardship, and they will endeavour therein to explain to you the measures taken for the speedy commencement of work on the company's ground. The first necessity which suggested itself to the directors was to find one or two competent men on the spot to take charge of the company's property and to superintend the management thereof; and in Messrs. H. J. King and Sigmund Neumann, who have accepted the appointment as managing directors, they believe to have secured two gentlemen in every respect qualified for this responsible position. To their prompt and energetic action it is due that the ground at this moment is, and has for some weeks been worked with the old machinery. That new machinery has already been contracted for at reasonable figures, and that the directors hope to be enabled to work the claims within a few months with latest and most economical inventions on an extensive scale. As anticipated by your directors, Messrs. King and Neumann, on their arrival at Jagersfontein, found the machinery taken over from the former proprietors, Messrs. Gompertz Brothers, altogether inadequate for the proper working of the claims, and they consequently engaged the services of Mr. E. Jones, one of the leading consulting engineers of Kimberley, for the purpose of suggesting the best method of working, and of furnishing specifications and estimates of the machinery required. A very complete and satisfactory report has been received and is open for your inspection. According to this report the cost of the mining gear was estimated at 13,346l. 4s., but the directors take pleasure in stating that a cablegram has been received informing them that Messrs. King and Neumann have contracted for the whole of the machinery for the round sum of 10,000l., of which contract they have approved.

Mr. D. J. Hartley, who has been in the employ of Messrs. Newberry Bros., of Kimberley, for the last two years, and who was highly recommended by these gentlemen, has been engaged as general manager, and your directors feel confident of his competency. For the purpose of describing to you the property of the company, the directors believe it will be best to give you an abstract of a letter received from the managing directors, which will speak for itself. On their return from Jagersfontein, under date Kimberley, May 12, they write as follows:—"Having thoroughly inspected the mines, and particularly the company's ground, and having further gathered information from most reliable sources, we are convinced that the company's property is among the richest and most valuable in the mine. The 30 block, although but little work has been done therein, yielded to the former proprietors many large and valuable diamonds, and is only just sufficiently opened to make it convenient for a large gang of men being employed thereon. The 20 block, which has not yet been touched, is in that part of the mine which up to now most work has been done, and adjoining the blocks of Messrs. Kerr Bros. and the Kohinoor Company, the local value of whose claims are quoted at about 5000l. each. We have every reason to believe that when this block has been cleared, which may be accomplished within six months after erection of the machinery, it will prove itself equally as rich and valuable as the neighbouring ones." From the statements laid on the table it will be seen that the fifty claims belonging to this company, including the old machinery taken over, stand in a trifle over 2000l. each only. It was resolved by the directors at their last meeting to issue share warrants to bearer to such shareholders as desire them. Due notice will be given when these are ready. In conclusion your directors have no hesitation to congratulate you on having acquired this valuable property at this comparatively low price, and they hope that with proper management they will be enabled at no distant date to declare some remunerative dividend.

The CHAIRMAN said: Gentlemen, it is hardly necessary for me to say that at a meeting like the present the business is almost formal. The directors have not had the time to go into the full business of the company, as they will do in the next few months; but everything has been properly commenced. As you will see by the report, we are quite satisfied we have invested our money in a good, substantial, and remunerative property (hear, hear), and I hope when I have the pleasure of addressing you next time I shall be able to say that we shall be fully at work, and shall be able to inform you that the directors are in a position to declare a dividend. (Hear, hear.) I beg to propose the adoption and reception of the report.—Mr. HARTLEY seconded the resolution.

The CHAIRMAN said he should be happy to answer any question which any shareholder might wish to put, as the directors wished to furnish the shareholders with every information. There was on the table an abstract of the books, by which the shareholders could see what had been done with the subscribed capital. He might mention that since the formation of the company the Jagersfontein had considerably increased in value, and he had no hesitation in saying that if they wanted to realise the property to-day they would be able to do so at a very considerable profit.

Mr. B. S. GOMPERTZ said that as one of the largest shareholders, he was perfectly satisfied with everything which the directors had done. The CHAIRMAN, in reply to a question by Mr. GOMPERTZ, said that by the last steamer the information arrived that labour was scarce, but there was no doubt that by this time the number of hands at work at the mine had been increased, and the number would be increased as the working progressed. He had no doubt that when they were in full working order he should be able to report much more favourably.

Mr. B. S. GOMPERTZ said: I am sure you will. The CHAIRMAN said that Messrs. King and Neumann had contracted for the whole of the machinery for the round sum of 10,000l., of which contract the directors approved. He could not estimate the exact time when the machinery would be finished, but no doubt in a short time they would be in full working order with both blocks.

The resolution for the adoption of the report and accounts was then put and carried. On the motion of Mr. ROWLANDS, seconded by Mr. B. S. GOMPERTZ, a cordial vote of thanks was passed to the Chairman and directors for the able way in which they had carried on the necessary management for working the company's properties.

On the motion of Mr. J. A. ROSELAAR, seconded by Mr. GOMPERTZ, a vote of thanks was passed to the Chairman for his able and courteous conduct in the chair, and the Chairman having acknowledged the complement the meeting broke up.

THE INDIAN GOLD MINES COMPANY.

An extraordinary general meeting of shareholders was held at the Accountants Hall, Glasgow, on Tuesday.

Sir WM. CUNNINGHAM in the chair.

Mr. J. WYLLIE GUILD (the secretary) read the notice convening the meeting.

The CHAIRMAN explained that the resolution authorised the creation of 6000 new shares of 10l. each, and expressed regret that they had no further news as to the crushing in India since last general meeting. They expected that the Indian letter describing the crushing which had been telegraphed would have arrived. Unfortunately the mail was late, they could not tell how. Immediately the letter arrived, so much of it as described the crushing would be circulated amongst the shareholders. He read various extracts from the reports of Mr. Severn as to the progress making at the mines, and wished to explain, for the information of the shareholders, why no further telegrams had been asked. The board had now had considerable experience of telegrams from India, and it was found that there was almost always some mistake or misunderstanding caused by them; as an illustration of which he might mention, they had sent lately a long telegram as to their boundary to their solicitor, and had received a reply that left matters just as much in doubt as ever, and that in a simple case. If the mine had been in regular work the actual results might, of course, be easily got by telegram; but as matters stood, to make the message useful as a means of forming a judgment as to prospects, a great deal more would be required. The locality, the difficulties or facilities of mining, the probable cost, the probable extent of the reef, and other details, would have to be given, and these were quite beyond the capacity of the wire to convey satisfactorily. In the circumstances, it was thought that it was better to wait for fuller details by the post. He might add, that even information by letter, as complete as it could be made at present, was of no very great practical value; the result of crushing small quantities not being by any means a sure indication of the general average result of future work when conducted on a large scale. The directors were fully persuaded that the ore crushed by Mr. Severn was as fair a sample as he could make of the reef, but gold was a very uncertain commodity, and they might find considerable quantities in a few scores of the first tons tried, and little or none in the next lot, or the reverse might take place; in fact, nothing less than work for a considerable time would tell them the value of their property. So, for one, he could not see that it was a matter of much importance whether they got weekly accounts or not. The board, however, were very willing in this matter to be guided by the wish of the shareholders. He concluded by stating that letters of apology for absence had been received from Lord Claud Hamilton, Mr. Milwraith, Mr. Ferguson, and Mr. Cunningham. Mr. Milwraith was detained in London by the case of Harris v. Fleming; and in reference to this case he (the Chairman) thought it right to state that it in no way affected the property of the company. It was a question between Harris and William Nicol Fleming and Company.—The motion was seconded by Mr. JOHN WILSON, and adopted.

Sir JAMES WILSON said there was general anxiety among the shareholders to know precisely to the very latest moment what had been done at the mine; now, the last letter was dated May 26, and they were entirely in the dark as to what had been going on since that date. He thought it would be more desirable in these circumstances that they should have a telegram from Mr. Severn as to the number of tons of ore he had crushed since that time, and of the result in gold produced by the crushing. He concluded by moving that a telegram be sent to

Mr. Severn requesting him to report the amount of tons crushed from the commencement to date, and the result in gold of the crushing.

The motion was seconded by Mr. ROBERTSON, and in reply to a question Sir JAMES WATSON said the telegram when received should be sent to the newspapers. The CHAIRMAN asked whether Sir James desired to have telegrams monthly?—Sir JAMES WATSON did not see how the shareholders could be kept informed of the results of the working of the mine except by monthly telegrams. Railway companies published a monthly statement of their traffic, and he could not see why a gold mining company should not publish monthly returns.

Mr. WILSON said they must guard themselves against mistakes arising. Mr. Severn might return them the actual results. Now, there was their own property and the Alpha property, and a difficulty might arise as to whether the results were from the Alpha or from their own property. This was a consideration which should weigh with them in asking telegrams, because they might be misled. If they got a reply to the first telegram, it should depend very much on Mr. Severn's letter whether they should ask further telegrams.

The CHAIRMAN said the question of monthly telegrams could be brought up at next meeting.

Mr. JAMES WATSON said he was quite willing to acquiesce in that arrangement.

The CHAIRMAN said if he were simply a shareholder he would be inclined for the reason he had given to wait for a letter, but unless some shareholder took that view, there was no opposition to Sir James Watson's motion.

Mr. BLACKIE moved that no telegram be sent.—Sir JAMES WATSON said the letter would be dated three weeks before it was received, and they would be in the dark as to what had taken place in the interval.—A SHAREHOLDER seconded Mr. Blackie's motion.—On a division Sir James Watson's motion was carried by 15 to 12, and it was agreed to telegraph to Mr. Severn in the terms proposed.—The meeting then separated.

RUBY AND DUNDERBERG CONSOLIDATED MINING COMPANY.

The ordinary general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Tuesday, Mr. W. A. MALCOLM in the chair.

Mr. J. FORSTER HAMILTON (the secretary) read the notice convening the meeting, and the reports were taken as read. The minutes of the last meeting were read and confirmed.

The CHAIRMAN said the reports, which had been circulated by the directors, had been made so full, and so much information that could be of any interest to the shareholders had been given, that it left really very little for him to say. All the information within the power of the directors to give had been afforded, but the directors would have every pleasure in giving every information which the shareholders might require on certain matters. It was a matter for regret that Mr. William Carr Young, one of the directors, was prevented by an accident from attending the meeting, and had asked that his regret should be expressed to the shareholders. This was the first half-yearly general meeting which he had held, and he had great pleasure in meeting the shareholders, as he might be able to answer questions, and allay fears which some of the shareholders might have had. Only a short time since the directors took advantage of the visit of Mr. H. Rickard to Eureka to get that gentleman to make a report upon the mine, thinking that the report of a practical man might be useful, and the directors on receiving that report circulated it amongst the shareholders. Some of the shareholders seemed to think that Mr. Rickard did not take so favourable a view as he might have done, but Mr. Rickard stated it was his custom to understate rather than to overstate what he considered to be the immediate future of a mine. What was in sight anyone could see and describe, but not that which could only be deduced from facts, and might be open to doubt, and wherever there had been any doubt Mr. Rickard had understated rather than overstated. Mr. Rickard expressed great pleasure to see that his anticipations had been already far more than realised, and was exceedingly glad that he had erred on the safe side, because it showed that what Mr. Rickard said carried weight with it. As it was everything which Mr. Rickard had written had been more than realised, and the only thing they could blame Mr. Rickard for was that he had not given a sufficiently favourable opinion of the mine. The position of the mine, up to the latest dates, had been given in the report; he was now able to supplement that by information and details contained in a special report from Mr. R. Rickard, who made the report with the special object of having it laid before the meeting. It was dated Eureka, June 8, and was as follows:—

Eureka, Nevada, June 8.—The following is a report on the mines of the Ruby and Dunderberg Consolidated Mining Company:—The No. 300 shaft has been extended a total distance of 530 ft. The present end is in more favourable ground for ore than any yet passed through, there being a seam of broken ground with ledge matter about 3 ft. wide. Work in this drift has been suspended for the time being, and the men put to drift in a southerly direction at a point 200 ft. west of old workings, to connect with No. 3 stope for ventilation. When this connection is made work will be resumed in the west cross-cut. No. 3 stope, above the 400, is good, turning out some good ore, but the ore body has not so large as it has been; at present it is 3 ft. wide by 8 ft. long, and appears to be widening, and is making up into virgin ground. The No. 4 stope, in the back of the 400, is slightly improved, the ore at present being about 2 ft. wide; this stope is about 50 ft. south-east of No. 3. The 600 south has been driven through a body of ore measuring 8 ft. by 12 ft. The present end is in softer ground, with strings of ore, indicating ore beneath. No. 5 stope, south of winze, is not looking so well as it was, the ore being of low grade. The same, north of winze has much improved, and has a body of good ore exposed, measuring 8 ft. by 15 ft. long. The 700, east of south drift, has encountered some good ore, and has been driven on a distance of 20 ft., all the way in good ore, with an average width of 6 ft. In the present end it is narrower, being 2 ft. wide. The ore is known to extend 30 ft. above the 600, and looks very promising to make below the level, and can be easily attacked from the No. 2 winze.

No. 2 winze below the 600 is down to a total depth of 158 ft. on the incline, and will be connected with the bottom level in a few days; as soon as this connection is made stoping will be begun on the ore on which the winze was sunk, and a drift started to intersect the ore making down from the 600 east of main drift. About 20 ft. from the top of No. 2 winze a drift has been driven 25 ft., in which some good ore is exposed. The 700 south is at present being drifted on the contact of shale and limestone, and will be pushed on south with all possible speed as soon as connection is made with the winze sunk below the 600. Take the mine as a whole, it is looking better than at any time since work was begun.—Bullwhacker: There is no work being done in the upper workings. The present workings are on the 300 ft. level, where there has been found a strong and regular lode, varying in width from 5 to 10 ft. This has been drifted on a distance of 30 ft. at an angle of 30° to the horizontal, and appears to be stronger in the bottom of the level, consequently a winze has been sunk to explore it in depth, which looks very encouraging.—R. RICKARDS.

In addition the directors had to-day received a telegram; it was a special telegram giving the latest information, and, consequently, was 20 days later than Mr. Rickard's letter:—

No. 2 stope, 55 ft. below the 600, opening a nice body of ore. No. 1 stope, east of 600, much improved. No change elsewhere: 400 tons high grade ore on dump. He might mention the directors estimated from the figures that 400 tons was high grade ore, and there were 60 tons which possibly might not be of such high grade as that which had lately been smelted. The usual weekly telegram, which had been received that morning, read as follows:—"Weekly run from furnace, \$13,000 from 211 tons of ore; producing 39 tons of bullion; one day loss clean out. The shipments of the week were 220 tons." The shareholders had now before them the whole facts of the mine as known from the reports. There were only one or two other matters to which he need refer. One was that in the early part of the six months to which the report alluded the directors had been somewhat disappointed in the amount of shipments, and he thought the shareholders generally shared in that disappointment. But they must consider the great difficulties the executive of Eureka had to encounter. The winter there had been more severe than had been known for many years, the fall of snow had been intermittent, and the roads awful, and wagons had stuck in the plains. There had been great difficulty in bringing the ore to the furnaces. During the month of January and February only the shipments of ore had fallen off. The shipment of Dunderberg ores from Oct. 1 to April 30 amounted to 2708 tons. It was only in May that the stoping operations commenced, so they might now look upon themselves as having really commenced operations at the mine. Hitherto they had been prospecting, and he hoped the shareholders would be rewarded for their long patience. With respect to the Bullwhacker Mine, the mining captain, in one of his letters, said he expected to increase the yield to 5 tons per day. The report contained full information as to the furnaces. The total amount smelted in April was \$582, and in May 955 tons were smelted, making a total of 5538 tons of which 2394 were from the Dunderberg Mine, 355 from the Bullwhacker, and 741 from the tribute ore. Unfortunately the price of lead had ruled low in the United States, which had very much interfered with the company obtaining a good value for their bullion. About six or eight months ago they received 2 cents per pound for the ore in Eureka, whereas they were now only getting less than half that amount. The expenses from Oct. 1 to the end of April amounted on behalf of the Dunderberg Company to \$52,833, whilst \$9199 had been expended on the Bullwhacker; in course of smelting they had expended \$41,730, on furnace reconstruction \$4797, and assay office \$922 the salaries and law expenses amounted to \$8560, and taxes, &c., to \$2400. Over \$10,000 had been expended in extraordinary prospecting. The expenses of timber used in the shaft and galleries amounted to \$12,200, making \$21,200 extra expenditure in prospecting more than they would have done under ordinary circumstances. He thought that was a policy which would commend itself to the shareholders, because he thought they would be of opinion that the directors were acting wisely in expending the money in developing the mine. In meant delay for a few months, but this year they would reap the benefit of the expenditure. (Cheers.) He moved the adoption of the report and accounts.—Major General J. WALPOLE D'OYLE seconded the motion, which was put and carried without any discussion.

Mr. GEORGE BATTERS said the Chairman had very clearly laid before the shareholders a statement of the operations of the company during the past year; but he thought it would be a satisfaction if the Chairman would inform them as to the commercial working of the company at the present moment, and as to whether they were making profits or not. (Hear, hear.) He noticed that the Richmond Company was making a profit of about \$50,000 a week, and they made a profit of \$35,000. In the past year. According to the Chairman's statement, and to what had been reported in the last few weeks, the Ruby and Dunderberg returns were now upwards of \$13,000 a week, which was rather more than one-fourth of the returns of the Richmond Company. Now if that were so, and their profits were proportionately anything like those of the Richmond Company, they should be making a profit of about \$1000, a week, or upwards of 20 per cent. per annum on the capital of the company, and their shares being at a premium and not at a discount. He wished to ask if the company was now being worked at a profit and the pleasure of presenting that gentleman a valuable testimonial to mark their

the present returns would be kept up, and what were the speculative chances of increasing the returns for the opening-up of the levels they were now driving? He understood that they were driving in the 600 ft. and 700 ft. levels, and that the ore bodies had not yet been intersected in the latter level, and he thought it would be of interest if the shareholders were informed whether there was any reasonable prospect of increasing the returns when the ore bodies were intersected in the 700 ft. level, which they were now driving, and for which the outlay of sinking the shaft had been incurred? (Applause.) The shareholders—or some of them—had been greatly troubled by the action of speculators who had an interest in depreciating the company's property; but this was a course of proceedings which they must always expect to be subjected to. What they had to do was to take care of themselves, and not be frightened out of their shares. The Richmond Company went through precisely the same ordeal, and they would therefore, be surprised at the powerful efforts which had been made to depreciate their property. He was aware that the company started with very little money, and, therefore, the directors must have had to put by the earnings up to a very recent date, if not up to the present time, in order to provide working capital. (Applause.) With regard to the Home Ticket lode he thought it would have been advisable to sink a winze from where they knew the body of ore to exist in the upper level, down towards where it would be intersected in the cross-cut that had been driven during the last 6 or 9 months. "Following ore" was a very good miner's maxim. (Applause.)

The CHAIRMAN, in reply, said the questions which had been put were only natural questions, considering the many unfounded reports that had been circulated with regard to the prospects of the mine, which were upwards of \$13,000 a week, and give a very handsome profit, and if these returns were continued, as there was every reason to believe they would be, the directors at a very moderate estimate calculate that these will yield a profit of between 6000 and 7000 a week. (Applause.) He, therefore, hoped by the next meeting the directors would be enabled to propose some division of profits. (Hear, hear.) They had now got over the worst of their difficulties. Mr. Batters had hit the right nail on the head in saying that they had not a large working capital. The fact was that the work done during the last 14 months had been done upon a working capital of something less than \$2000. (Applause.) He knew something about mining, but he did not know another mine which had been worked with such economy of capital. The greater part of the working capital had gone in liquidating the debts of the old company which were taken over with the property, and which it was estimated that the company would have had time given them to pay. But for this insufficiency of capital the Bullwhacker and other mines would have been productive before this time. This was also the reason why the upper works at the Home Ticket mine were not continued downwards, as recommended by the agent. With regard to the profits, the shareholders must remember that the weekly returns from the furnaces were given in gross, at the saleable rates at the place. The value of the bullion must depend to a great extent on the market value of silver and lead, which were both low in America. It must not be forgotten that they also had gold, and gold in quantities which would make some of their friends in some of the Indian mines delighted if they had as much. There was every probability, and, indeed, every reasonable hope, that as the mines are developed the returns will be greatly increased. (Applause.) It was also very satisfactory to hear that the value of the ore was increasing. (Hear, hear.) Notwithstanding the smallness of the working capital, and indebtedness of the company in Eureka, as against the shipments of ore, had been reduced to a very trifling sum indeed. (Hear, hear.) The ore raised was a perfectly negotiable and solid security upon which to raise money, and the terms upon which the loans had been raised had been extremely moderate, and the whole of the arrangements made with regard to finances out there had met with the entire approval of the directors. (Hear, hear.) They had at present about 450 tons of ore on hand, which at the very moderate estimate of \$50 per ton, made the gross value of the ore mined and on hand at the present time, at the smelting furnaces \$22,500, and that less the cost of smelting, equivalent to about \$4725, and would give \$23,275 the standard Eureka value; and in order to convert that into cash at San Francisco it would be necessary to deduct about one-third of the gross amount.

The CHAIRMAN, in reply to a shareholder, said the general charges of the Richmond Company were, of course, proportionately very much smaller than those of this company. Besides the Richmond Company had a refinery and railway at large capital outlay, which were now yielding large profits. This company was also doing a very large amount of prospecting, and the management of the mine had been very carefully looked after, both by the superintendent and the mining captain. (Applause.) But besides these the company had an executive board in Eureka composed of three of the most responsible men in the place. (Hear, hear.)

The meeting was then made special for the purpose of confirming the sale, by the Ruby and Dunderberg Consolidated Mining Company, to the Lord Byron and Valentine Mining Company, of the mines called the "Lord Byron and Valentine Mines."

The CHAIRMAN stated that with the funds realised by the sale of the Lord Byron and Valentine Mines the company would be able to develop what were considered to be very valuable mines. It was considered more desirable to sell the properties right out than to lease them; and the funds received would enable the company to pay off the debentures, and thereby increase the credit of the company. He believed that the shares would be improved fully 12 1/2 each, and whilst the scheme had been supported by a very large number of the shareholders not one objection to it had been raised. He then moved a resolution in accordance with the terms of the notice.—Mr. G. HEARNS seconded the motion which was supported by Mr. G. WALKER and carried unanimously. The meeting then closed with the usual compliments.

THE PRINCE ROYAL TIN, COPPER, AND SILVER-LEAD MINING COMPANY.

A special meeting of the shareholders was held at the Mine on Tuesday, Mr. WILLIAM PHILLIPS, the purser, in the chair.

After the notice convening the meeting had been read,

The CHAIRMAN said:—Gentlemen, that notice sufficiently explains the object of this meeting, which is not for what is called general business, nor for making a call upon the shareholders, &c., but for considering the propriety of dividing the sett, as we have an opportunity of disposing of the north part of the sett at a considerable advantage to this company. Now, you can see by the plans before you, and some of you who have been over the ground to-day have seen (and have been impressed more forcibly by the fatigue of your survey), that the sett is a very extensive one. Not only so, but that in its north and south extension it embraces many lodes of varied character. We have lodes of tin, lodes of copper, and lodes of silver and lead, and some of these lodes are at considerable distances one from another. Not one engine, not several engines, will be required to work the whole of this great extent of mining ground. We have made considerable and valuable discoveries in the part of the company's property now being worked, and there is a proposition before us of parting with the north part of the sett to a company who will work it, and who will not doubt make valuable discoveries there also. We have so far entertained this proposition, because the amount of cash the parties are prepared to pay for the ground will, although we may not want it particularly at the present moment, help us to earlier dividends; and unless we are prepared to work the ground ourselves, may as well be accepted. I think I shall not be betraying my trust when I tell you that the matter has been already discussed, and the principal part of the business already agreed to by all the larger shareholders, and that only remains to be considered, and approved of, and decided at this meeting. If approved another meeting, within a fortnight from this date, will be required to confirm the resolution. We have so arranged that any shareholder who shall disapprove of the proposed division shall be entitled to his full share in that part of the new company to which he is now entitled in the property; so that no part of his property is wanted to be transferred from him unless he agrees to such transfer; his position being simply this—that his name will be transferred into the new company as the holder of such share, instead of participating in the proceeds of such share. Now, gentlemen, having explained, I think sufficiently the object of this course, I propose that this sett of the Prince Royal Mines, in the parish of St. Agnes, be divided, as has been proposed, by a straight line from east to west, laid down near the mark to-day pointed out, and that Messrs. J. T. Trevena, W. Tregay, W. Wickett, W. Phillips, and Capt. H. Bennetts be a committee for carrying out this proposition, and for selling, conveying, and transferring the said north part of the said sett, to the gentlemen representing the new company.

A SHAREHOLDER wished to ask what is the amount of purchase-money contemplated? The CHAIRMAN said that he was not in a position at present to disclose that, and could not, therefore, answer the question. What they had to decide to-day was as to the division, and all the other questions must be left in the hands of the committee until brought up for confirmation.

A SHAREHOLDER did not see that he should agree to any such proposition unless he could know the amount of purchase-money.

The CHAIRMAN: The gentleman will be perfectly safe in agreeing to the proposition, because if he objected to the amount of purchase-money when that is disclosed he can accept share in the new company to the full value of his interest in the old; in fact, that interest will not be transferred without formal transfer from each shareholder, so that each shareholder is perfectly safe in the holding of his interest until he transfers it himself.

Mr. WICKETT said: Mr. Chairman and gentlemen, I have taken a very considerable interest in the Prince Royal Mine, and have looked into the matter closely for some time, and I consider that the proposition which has been so ably put before us by our worthy Chairman to-day merits our approval, and ought to be agreed to. We have taken the advice of some of the foremost mining engineers of the present day in this matter, as well as in all other questions which have been connected with the Prince Royal Mines, and they consider that the carrying out of the division of the sett in the way proposed will be beneficial to all the shareholders; I, therefore, second the proposition of the Chairman that the sett be divided, and that Messrs. J. T. Trevena, W. Tregay, W. Wickett, W. Phillips, and Capt. H. Bennetts be the committee for carrying out this division. The resolution having been put to the meeting was agreed to unanimously.

The business of the meeting having been concluded the shareholders dined together in the account-house of the mine, under the presidency of the purser, who had provided a sumptuous repast, to which the company did ample justice.

The CHAIRMAN, on the cloth being removed, proposed "Her Majesty the Queen," which was loyally accepted and responded to with musical honours. In proposing the next toast, "His Royal Highness the Prince of Wales," the Chairman referred to the Prince Royal Mines as being a royal mine in fact as well as in name, being on the Prince's property, and producing silver, one of the royal metals.

Capt. TREVEA proposed "The Prince Royal Mine," and coupled with that toast the health of the manager, Capt. Bennetts. He said he had visited the mines several times, and thought very highly of it. They had a very first-class piece of mineral ground before them, containing some of the most remarkably productive lodes in the county, and he had no doubt that the Prince Royal Mines would be very profitable to the adventurers. As to Capt. Bennetts, they could not be too thankful to him for having introduced them into such a valuable property, and he thought the day was not very far distant when they would have the pleasure of presenting that gentleman a valuable testimonial to mark their

esteem. He (Capt. Tregay) suggested a piece of plate or something of that sort such as the worthy captain might hand down to his children's children to bear witness to future generations of the esteem in which he was held by his co-adventurers in the Prince Royal Mines.

Capt. BENNETTS, on this toast being heartily received with honours, in returning thanks, referred to the fact of his having been connected with the mine for some years before he introduced the present company, and of his having driven the long adits up very near the valuable mineral deposits they had visited that day. His friends who had been the underground they had made. In fact, all the mine required now was to be supplied with some machinery and opened up in order to make profits. As to the prospect of a testimonial to himself, he hoped the next time they met Capt. Tregay would propose that in good earnest, especially as they had silver enough in the mine to testimonial every shareholder therein. We might as well each of us have a service of silver to mark our connection with the Prince Royal Mine, and we should have plenty to sell after that. Still we had no doubt the tin lodes, which were numerous and very valuable, and he hoped the mine, which would now be in great profit to the shareholders. As to the new mine, which would now be started in what had been the north part of their sett, he believed that equal success would attend that enterprise, and quickly.

Mr. TREVEA proposed "Absent Shareholders," and said that he had several letters expressing regret at not being able to attend this meeting, and satisfaction at the prospect of the division of the sett, as they all thought the division on the terms proposed would result in profit to the company, and the more rapid development of the mine.—This toast was heartily responded to, and accompanied by hearty cheers from the employees.

The CHAIRMAN proposed "Success to the neighbouring mines," and coupled with that toast Mr. Wickett's very good health.

Mr. WICKETT, in returning thanks, said that his father and himself had been connected with many of the neighbouring mines, and they were surrounded with many which had been very profitable, and some which are profitable mines still. He might name East Wheel Rose, Old Shepherds, and West Chilverton, for silver and lead. Perran St. George for copper, and the Kitty's and their sister mines for tin. These mines had paid immense profits, and he thought the Prince Royal Mines and the newly-born sister would prove as good as the best of them.

Captain TREGAY proposed the "Continued health of the purser, Mr. William Phillips." They all knew him as a genial, hearty, thoroughgoing gentleman. He had proved a most excellent caterer that day, as the buoyant spirits around him fully proved. He had fancied during the day that Mr. Phillips was not exercising very great prudence in exploring the mine as he had done in so many of the difficult passes. In every mine where much timber is required in the levels there are narrow muddy difficult places to get through, such as Mr. Phillips had found there; but they were all glad to find that he had so pluckily pushed through, and had enjoyed the present festival all the more for the struggle.

Mr. PHILLIPS, in returning thanks, referred to the tough work he had to get through some of the levels, and that at one time while down below he thought the day was not far distant when his name would be inscribed on marble. He had been rewarded, however, in seeing the bright silvery veins of ore, and he hoped that before his marble day came around he would see that name inscribed in the records of plate Capt. Bennetts had promised him.

This concluded a joyous day's proceedings, and the company at once took to their carriages amid the echoing cheers of the gratified workmen employed and others who had shared the day's hospitality.

WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS, MINEOWNERS, STOCK AND SHARE DEALERS, &c. 1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

Nearly twenty years ago the weekly information which had previously been published for a great number of years in *WATSON BROTHERS' Mining Circular* was transferred to the columns of the *Mining Journal*, with the following announcement.

In the year 1843, when mining was almost unknown to the general public, attention was first called to its advantages, when properly conducted, in the Compendium of British Mining, commenced in 1837, and published in 1843, by Mr. WATSON, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Industry, published annually in the *Mining Journal* for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring to success in the aggregate," and Messrs. WATSON BROTHERS have always selected a list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and shareholding than there is at present; and from the long-continued experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to recommend mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash, for the usual fortnightly settlement in all Mining and Stock Exchanges, and on the London and foreign markets, prices of the day, free of all charge for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in on the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £22s.

Messrs. WATSON BROTHERS take this opportunity of stating that on July 1 they took into partnership Mr. H. J. DEAN, who has been for a number of years associated with the firm, and Mr. W. H. H. WATSON, who has had some years experience of practical mining and engineering in Cornwall, and is the son of the senior partner. The firm will still be called that of "Watson Brothers."

The number of weekly communications received from almost every part of the world in regard to remarks in this Circular indicate so plainly how much they are read (and, we trust, appreciated) that they will be continued by the same writer.

Indeed, while new blood is introduced to attend to the more laborious and mechanical details of the business, the old will have more time to devote to the different departments.

We are glad to see that the Pink lode is becoming properly appreciated. The Polberro Tin Mining Company has been formed, in 20,000 shares of 12 each, and mainly to work the Pink lode among others, and the agent reports—"I consider the Polberro sett a most valuable property even for the Pink lode alone." Now, a few months ago the Pink lode was worth 500 per fathom in Blue Hills, and running towards the boundary of East Blue Hills, in which sett it could be cut in the adit 50 fathoms deep. We then secured East Blue Hills sett, divided it into 12,000 shares of 5s. each, and every penny of the money thus raised (30000) was devoted to working capital, and we invited all our friends to join, without charging one sixpence premium or promotion money, and a great many shares were taken up in Cornwall, and the rest among our friends. Perhaps had we asked 20,000 for the property the public generally would have rushed after it. At any rate, we hope the Pink lode will do well for us all; and no doubt we shall soon give a good account of it in East Blue Hills. We believe Polberro to be a good spec.

We do not ourselves remember the special circumstances referred to by our anonymous correspondent.

Soon after our remarks (above) were written upon East Blue Hills we received a telegram from the purser that rich tin had been found in the 30. He has since written us to say, "When Bennett was underground, on Thursday, he directed the men to shoot a few holes in the 30, and when I was there yesterday I was astonished to see the stones they had brought up. I have had two of them assayed—No. 1 made 8 cwt. 11 lbs. of black tin to the ton of stuff; No. 2, 7 cwt. This is particularly rich stuff. He adds—'I never knew an old mine left so rich, and if we find the ground in the 25 as described we shall have the best mine in the district—50 fms. deep, and no engine required, and any amount of tin ground laid open that will pay for stoping.'"

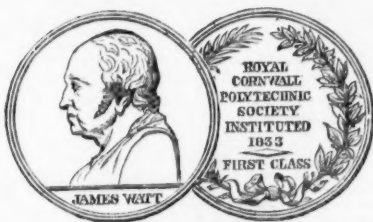
At the 90 end in Carnarvon the agent describes the lode as 2 ft. 6 in. to 3 ft. wide, almost solid ore, and on this he puts the very moderate value of 36d. per fathom.

NORTH GREEN HURTH.—The No. 1 level here is being driven steadily on by four men, and is very nearly up to the point where the rich Green Hurth vein is expected to cross. The No. 2 level, also driven by four men, is making rapid progress. In about 10 fathoms further it is expected an east and west vein will be cut under a productive bed of limestone; and in 20 fms. a north and south vein in the same position, from which fine stones of ore (a cartload or two) have been broken at surface.

SANDYCROFT FOUNDRY AND ENGINE-WORKS CO. (LIMITED), CHESTER.

SPECIALITY MINING MACHINERY.

ESTABLISHED 1838.



PUMPING & WINDING ENGINES.

AIR COMPRESSORS AND ROCK DRILLS.

PITWORK.

Crushing Mills & Stone Breakers.

DRESSING MACHINERY.

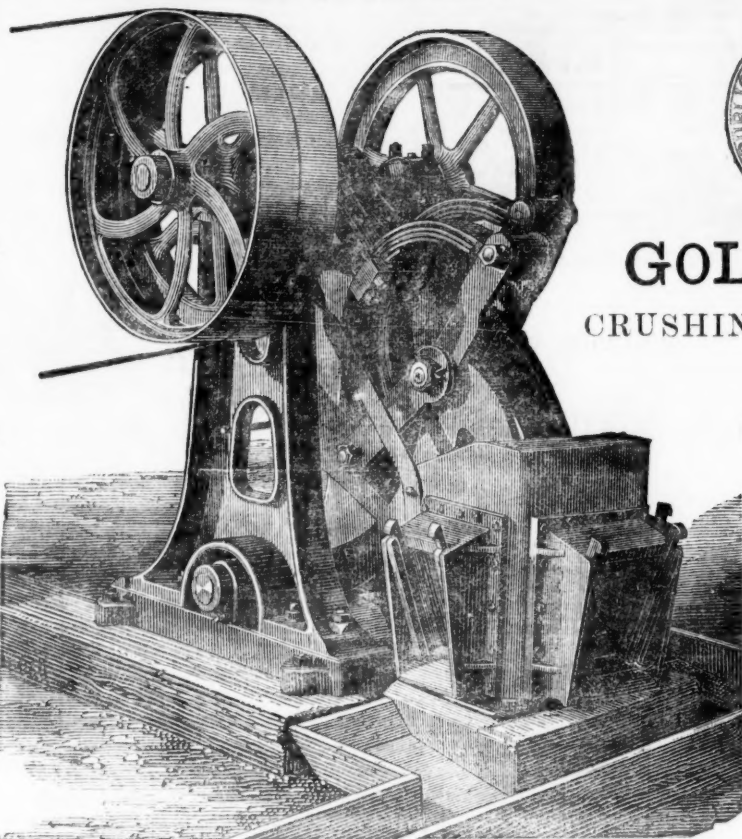
BOILERS.

WATER-WHEELS.

FORGINGS.

MINING TOOLS.

AND STORES OF ALL KINDS.



GOLD & SILVER

CRUSHING AND AMALGAMATING MACHINERY.

Californian or Gravitation

STAMPS

OF ANY SIZE OR PATTERN

PANS.

Concentrators & Separators.

BUDDLES.

RETORTS.

SIEVING & BLANKETS.

Amalgamated Copper Plates.

PATTERSON'S PATENT ELEPHANT ORE STAMPS.

IN USE IN CORNWALL, CALIFORNIA, BRAZIL, AUSTRALIA, AFRICA, AND INDIA. THE BEST MACHINE FOR PULVERISING

GOLD QUARTZ,

And other hard and refractory Materials. Particularly designed and adapted for transmission Abroad, and for Countries where Transport is a difficulty. Quickly and economically erected. Can be seen stamping Quartz near London.

LONDON OFFICE: 6, QUEEN STREET PLACE, E.C.

SAFETY IN COAL MINING.—The work of taking down the stoppages in the Mandlin seam at the New Seaham Colliery, where a disastrous explosion occurred in September last, was commenced on Saturday. It will be remembered that this seam was shut off, from indications of fire being observed during the explorations, and that 28 bodies in the same seam were entombed at the same time. On Monday, great progress was made with the operations. A quantity of foul gas was met with, but it is being gradually drawn off and fresh air courses established. The explorations are being carried out with the use of the Fleuss patent gas and diving apparatus and the Fleuss patent lime light lamp. By the aid of the former, workmen are enabled to proceed into the midst of bad gas and carry on their operations as simply as though they were working in the open air. Ordinary pit lamps can only be carried a short distance in the re-opened workings, but the Fleuss lamp can be carried into the most dangerous parts. The practical test to which these ingenious instruments are now being put is watched with great interest by mining engineers generally.

THE SPECTROPHONE.—At a recent meeting of the Philosophical Society of Washington Prof. Graham Bell communicated the announcement of his discovery of the spectrophone, the latest outgrowth of the photophone. When Mr. Bell announced the discovery of the photophone last August, he ventured to predict that probably all matter would be found to possess sonorous properties of the same nature as those manifested by the discs used in that instrument. More recent investigations in Europe with gases and liquids have fully verified this prediction. Any liquid or gas placed in a test tube and exposed to the action of a beam of light condensed upon it by a lens can be made, by means of an interrupter, to emit musical tones. This has been shown by Prof. Tyndall in his paper, read to the Royal Society, on radiant heat. Some substances thus emit feeble sounds, others stronger ones. Iodine vapour, nitrogen oxide, and bromine give very loud sounds. It is found that those substances which emit loud sounds are those which absorb heat in a high degree, and among these lamp-black is especially remarkable. It has been questioned whether such sounds are provoked by the luminous rays or by the dark ones. M. Mercadier expressed the belief that the exciting rays are the red and dark ones. This led Prof. Bell, with Mr. Sumner Tainter, to experiment with the sonorous properties of carbon disulphide, actuated by the light of the spectrum. When lamp-black is exposed to the action of the light of the spectrum it is found to give a sonorous response to all of its rays as far as the middle of the violet, and perhaps beyond. The intensity of the sound, however, varies remarkably in different parts of the spectrum. Taking the rays successively from different parts, from the violet towards the red, the sounds begin very feebly and increase in intensity, reaching a maximum in the ultra-red. Beyond that point they suddenly cease. The increase of intensity is very gradual, the decrease very sudden. Other substances have been experimented with, and while exhibiting similar properties each has a range of its own. Porous and fibrous substances give loud sounds. Thus common wool or worsted is found to be very sonorous, but the sounds are obtained wholly from the visible parts of the spectrum and have the maximum intensity in the green. In all substances tried success has resulted, but nearly all have a very short range. In experimenting with more homogeneous substances of simpler constitution still more definite results are obtained. The rays of the spectrum are passed through sulphuric ether. Outside of the ultra-red is a very narrow band, which causes sounds, while the other parts fail to produce them. Hydrogen peroxide gives sounds at several places wholly within the visible parts of the spectrum, and those places are found to coincide with the positions of the known absorption bands of that substance. The same is found to be true of nitrogen oxide and a solution of ammonia, sulphate of copper, and many other substances. The general law deduced is that sounds are produced in any substance by the rays which it absorbs. Thus a kind of spectrum analysis can be obtained through the intermediation of sound. The principal value of the spectrophone, Mr. Bell believes, will be found in the investigation of absorption bands in the ultra-red end of the spectrum.

SAMUEL OSBORN AND CO.,

MANUFACTURERS OF TOUGHENED

CRUCIBLE STEEL CASTINGS

Of all descriptions of special strength and solidity.

ALSO; MANUFACTURERS OF

BEST CAST STEEL FOR ENGINEERS' AND MINERS' PURPOSES; FILES; SAWS; HAMMERS; RAILWAY SPRINGS, &c.
STEEL SHEETS AND FORGINGS.

SOLE MAKERS OF

"R. Mushet's Special Steel," for Lathe and Planing Tools and Drills.
THE STEEL WHICH REQUIRES NO HARDENING.
And R. Mushet's Celebrated Extra Best Welding Titanic Cast Steel for Boreis.

ADDRESS:—

CLYDE STEEL AND IRON WORKS, SHEFFIELD.

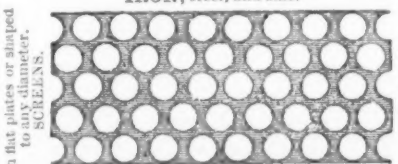
Export
Orders
promptly
attended to.

PERFORATORS, WIRE WEAVERS, AND GENERAL
IRONMONGERS,

J. AND F. POOL,

COPPERHOUSE, HAYLE, CORNWALL

Millimeter holes perforated in sheet-copper, brass, IRON, steel, and zinc.

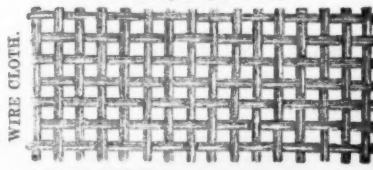


JIGGER-PLATES AND CYLINDRICAL SIEVES.

Manufacturers of Stamps-Grates, Sieves, and Riddles, for Mining and other purposes, by Self-acting Steam Machinery.

CERTIFICATE OF MERIT
Awarded by the
Mining Institute of Cornwall
for
SIEVES AND GRATES,
Shown at the Annual Exhibition, 1879.

Lineal holes per inch woven in copper, brass, iron, and steel wire.



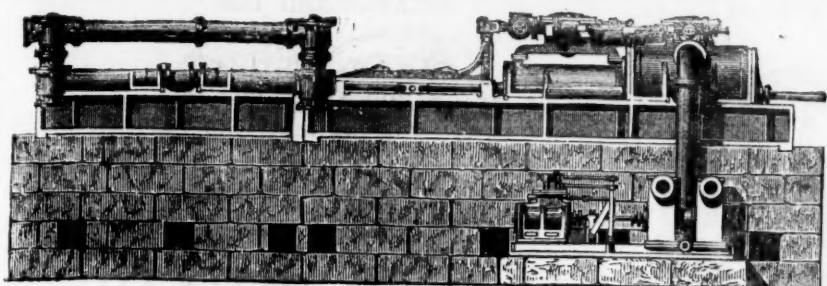
JIGGER-BOTTOMS AND RUSHER SIEVES.

SPECIALITY.—Thick Copper, Brass, Zinc, and IRON Perforations, Classifying-Sieves, Pierced Pulveriser and Stamps-Grates up to 324 holes to the square inch, Conical hole Copper Jigger Plates and round bottom "Sifts," Spigot and Faucet Zinc Air pipes, &c.

Established 1846.
Samples and price
on receipt of
specification.

HATHORN, DAVEY, AND CO., LEEDS.

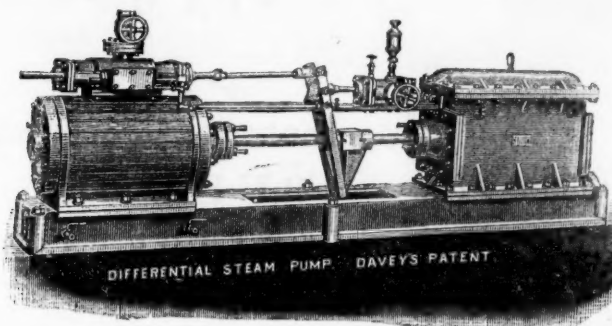
The DIFFERENTIAL PUMPING ENGINE (Davey's Patent).



AS APPLIED UNDERGROUND.

H., D. and Co. have facilities for supplying very powerful Pumping Plant at short notice.

30,000-h.p. in successful work, in all sizes.



DIFFERENTIAL STEAM PUMP DAVEY'S PATENT.

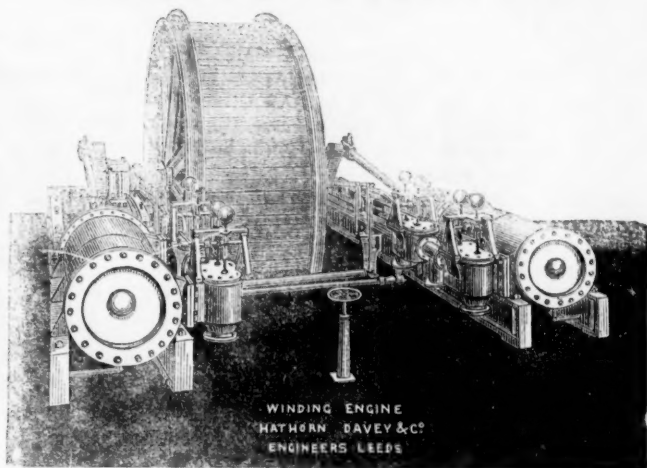
GOLD MEDAL
PARIS,
1878.

MAKERS of all
kinds of

STEAM
AND
HYDRAULIC
MACHINERY

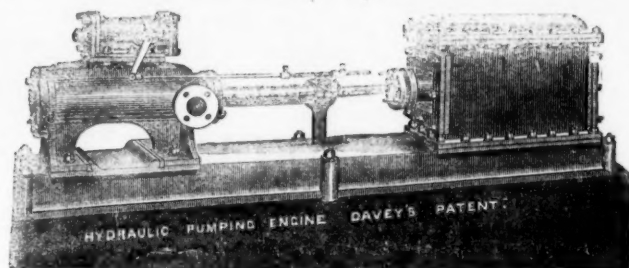
FOR
MINES,
AIR COMPRES-
SORS,
MAN ENGINES,
CAPSTANS,
&c., &c.

CATALOGUES ON APPLICATION.



WINDING ENGINE
HATHORN DAVEY & CO.
ENGINEERS LEEDS

Steam and Hydraulic Winding Engines.

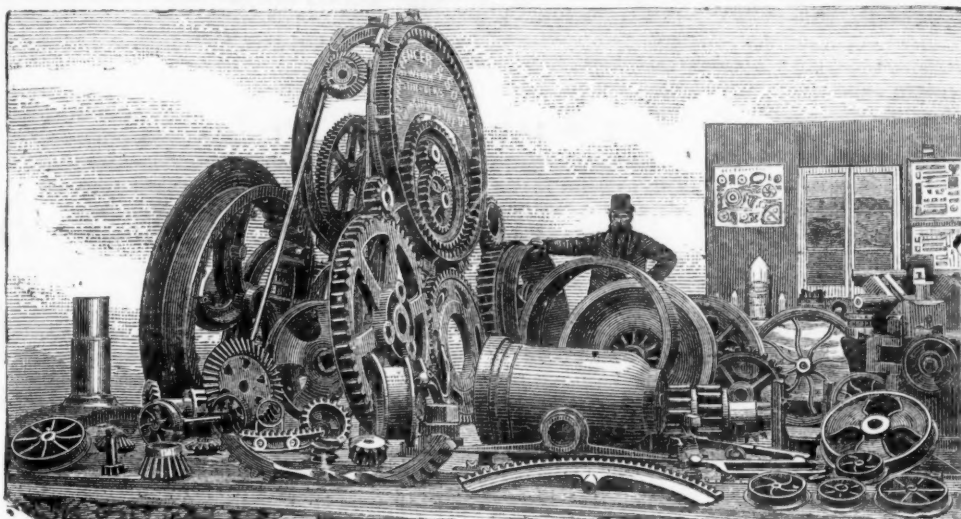


Hydraulic Pumping Engines for dip
working in Mines, &c.

JOHN SPENCER & SONS,

Newburn Steel Works. Newcastle-on-Tyne.

STEEL
CASTINGS.
WHEELS & AXLES
FITTED COMPLETE.
INCLINE PULLEYS AND
ROLLERS.
STAMP HEADS AND
SHOES
AND EVERY DESCRIPTION OF
STEEL CASTINGS.



STEEL
FORGING S.
RAILWAY
SPRINGS AND BUFFERS,
JUMPER STEEL,
MINING CAST STEEL
AND
BEST CAST STEEL FOR
TOOLS.
IMPROVED
VOLUTE SPRINGS

For the Excellence of our Manufactures we have received the following AWARDS:—VIENNA EXHIBITION, 1873, Diploma of Merit; SOUTH AFRICAN EXHIBITION, 1877, Gold Medal; PARIS EXHIBITION, 1878 (the ONLY ONE awarded to any Tin-plate Manufacturer), Gold Medal; SYDNEY EXHIBITION, 1879, First-class Diploma; MELBOURNE EXHIBITION, 1881, First-class Award.

E. P. & W. BALDWIN, WILDEN, N^R. STOURPORT,

MANUFACTURERS OF

SHEET IRON.

Brands—

"BALDWIN-WILDEN" AND "SEVERN."

EXPORT AGENTS—BROOKER, DOFE, & CO., CORBET COURT, GRACECHURCH STREET, E.C.

TIN PLATES.

Brands—

"E P & W B"
WH

"WILDEN" "UNICORN" "ARLEY" "STOUR."

FRANCIS MORTON AND CO., LIMITED, LIVERPOOL,

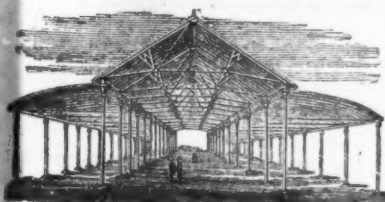
MANUFACTURERS OF

GALVANISED CORRUGATED IRON ROOFS, BUILDINGS, AND SHEDDING,

WHICH THEY HAVE EXTENSIVELY ERECTED FOR THE REQUIREMENTS OF

Forges, Rolling Mills, Puddling Sheds, Ironworks, and Collieries,

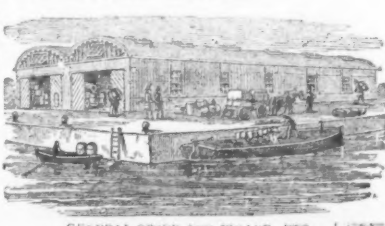
Erected Complete in this Country, or prepared to Plan for Erection Abroad.



OPEN SHED FOR COVERING LARGE AREAS.

GALVANISED OR PAINTED CORRUGATED IRON ROOFING PLATES AND TILES. HEAVY CORRUGATED IRON PLATES for fireproof floors, roadways, parapets, &c. (for producing which F. M. and Co. have recently laid down powerful Hydraulic Machinery). Wrought-iron Tanks, Gutters, and General Constructional Wrought Ironwork.

DESIGNS PREPARED, AND ILLUSTRATED DESCRIPTIVE CATALOGUES FORWARDED ON APPLICATION.



GENERAL STORE FOR WHARF, ETC.

London Office: 1, Delahay Street (first door out of Great George Street), Westminster, S.W.

INCREASED VALUE OF WATER-POWER.
MacADAM'S VARIABLE TURBINE.

This Wheel (which is now largely in use in England, Scotland, and Ireland) is the only one yet invented which gives proportionate power from both large and small quantities of water. It can be made for using a large winter supply, and yet work with equal efficiency through all variations of quantity down to a fifth, or even less if required. It is easily coupled to a steam-engine, and in this way always assists it by whatever amount of power the water is capable of giving, and therefore saves so much fuel.

This Turbine is applicable to all heights of fall. It works immersed in the tail-water, so that no part of the fall is lost, and the motion of the Wheel is not affected by floods or back-water.

References to places where it is at work will be given on application to—

MacADAM BROTHERS AND CO.,
BELFAST.

WHAT IS YOUR DISEASE—WHAT IS YOUR REMEDY?

GRATIS, free by post on receipt of Two Stamps to pay Postage.

THE BOOK OF POSITIVE REMEDIES.

It is the Book of Positive Medicine for the Cure of certain forms of Debility and Nervousness, viz.—Mental and Physical Depression, Palpitation of the Heart, Voices in the Head and Ears, Impaired Sight and Memory, Indigestion, Pains in the Back, Headache, Piles, Constipation, Hysteria, Dizziness, Local Weakness, Muscular Relaxation, Nervous Irritability, Blushing, &c., resulting from Exhaustion of Nerve power, effect of Overwork, City Life, Worry, Brain Fati Intemperance, and other abuses of the system.

H. and H. SMITH and Co., Positive Remedy Laboratory, 25, Southampton-row, London W.C.



PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,
SILVER MEDAL, 1867.

A **DIPLOMA—HIGHEST OF ALL AWARDS**—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE or the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24-90, 27-60, 24-80, 26-10, 28-30, 27-10, 28-40, 28-70 metres. Total advance of south heading during January was 121-30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere ($7\frac{1}{2}$ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUNNEL; and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest where the rock is hardest.

These Machines possess many advantages, which give them value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL USE THROUGHOUT THE WORLD FOR MINING, TUNNELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the most portable—the most durable—the most compact—of the best mechanical device. They contain the fewest parts—have no weak parts—act without shock upon any of the operating parts—work with a lower pressure than any other Rock Drill—may be worked at a higher pressure than any other—may be run with safety to FIFTEEN HUNDRED STROKES PER MINUTE—do not require a mechanic to work them—are the smallest, shortest, and lightest of all machines—will give the longest feed without change of tool—work with long or short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or open work. Their working parts are best protected against accidents. The various methods of mounting them are the most efficient.

N.B.—Correspondents should state particulars as to character of work in hand in writing us for information, on receipt of which a special definite answer, with reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL, IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

McKEAN AND CO.
ENGINEERS

OFFICES,
5, RUE SCRIBE, PARIS

MANUFACTURED FOR McKEAN AND CO. BY
MESSRS P. AND W. MACLELLAN, "CLUTHA IRONWORKS"
GLASGOW



By a special method of preparation this leather is made solid, perfectly close in texture and impervious to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

HEPBURN AND GALE,
TANNERS AND CURRIERS,

LEATHER MILL BAND AND HOSE PIPE MANUFACTURERS
LONG LANE, SOUTHWARK LONDON

Prize Medals, 1851, 1855, 1873 for
MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

THE UNDERSIGNED, having secured the Grants of several VALUABLE MINERAL PROPERTIES (TIN AND COPPER), in the St. Blazey District, in the vicinity of Fowey Consols, &c., is DESIROUS of OBTAINING the CO-OPERATION of CAPITALISTS for their EXPLORATION. There is little or no risk involved in the undertakings, and the capital require in each case is very limited. R. SYMONS

11, Parade, Truro, 3rd February, 1881.

MAP OF CALLINGTON, CALSTOCK, AND TAVISTOCK MINING DISTRICTS.
Proposed to be published by subscription, a MAP of the ABOVE DISTRICTS, showing the names and boundaries of all existing sets, lodes, cross-courses, and every other matter which such a map should contain. Persons disposed to patronise the publication—at One Guinea per copy—will please send their names as early as possible to me. R. SYMONS, Mineral Surveyor, Truro.
February 3rd 1881.

TO PARENTS AND GUARDIANS.

AN ELIGIBLE OPPORTUNITY is now offered for the SETTLEMENT of an ACTIVE YOUNG GENTLEMAN IN CANADA. He will be enabled to obtain his profession as a Solicitor in five, or if he be a Graduate in three years. Cost of living about £150. In the meantime he will have active work, and obtain a knowledge of the Dominion, which is destined to be one of the most prosperous of the Colonies. Premium, £100 sterling.

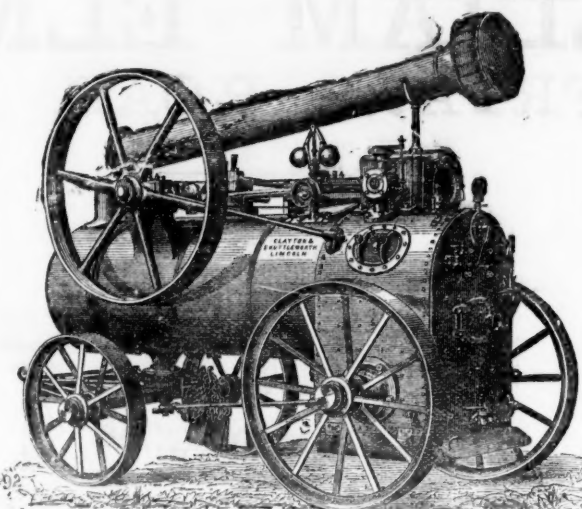
32, Wellington-street, Toronto.

HERBERT JONES, Land and Loan Agent

1880-81.—MELBOURNE (AUSTRALIA) EXHIBITION.

FIRST PRIZES FOR PORTABLE ENGINE AND THRESHING MACHINE.

TWO GOLD MEDALS.



The Royal Agricultural Society of England have awarded Every First Prize to Clayton and Shuttleworth, for Portable and other Steam Engines since 1836, and Prizes at every Meeting at which they have competed since 1849.

GOLD MEDALS, AND OTHER PRIZES,

Have been awarded to CLAYTON AND SHUTTLEWORTH at the various International Exhibitions of all Nations, including LONDON, 1851, 1862, PARIS, 1855, 1867, 1878. VIENNA, 1857, 1866, 1873;

for their

STEAM ENGINES, Portable and Fixed
(For Coals, Wood, Straw, and every description of Fuel.)

THRESHING MACHINES.
GRINDING MILLS.

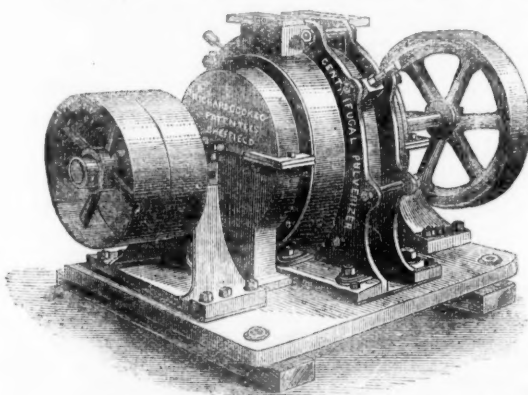
TRACTION ENGINES, &c.

Catalogues in English and in all the Continental Languages free on application.

CLAYTON AND SHUTTLEWORTH,
STAMP END WORKS, LINCOLN, & 78, LOMBARD STREET, LONDON.

LUCOPS' Patent Centrifugal Pulveriser,

(Two tons per hour with 5 horse-power actual.)



For reducing to an impalpable powder, or to any requisite degree of fineness, all materials capable of being thus treated. CEMENT, CHEMICALS, GRAIN, COAL, COLOURS, PHOSPHATES, LIME, COPPER, TIN, ZINC, and other Ores with rapidity, completeness, and perfect uniformity.

THE ONLY GUARANTEED MACHINE FOR

GOLD QUARTZ.

This mill consists of a circular iron casing, the section being elliptical in form, and is fixed vertically on a firm bed or foundation plate, a shaft runs through the centre of the casing on which is keyed a series of arms, in the extremities of which revolve two or more slightly oblong iron rollers, which, when put in motion, fly off from the centre and run upon the interior periphery of the casing, and by centrifugal force crush and pulverise the article under treatment.

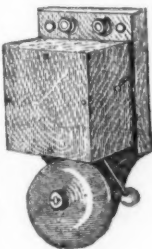
The effect produced by this system is most extraordinary in its practical results, the power required is small in consequence of the comparative absence of friction from the working parts of the mill, the combined results of the rolling action of the crushers and their impact by centrifugal force on the material, being the same in kind, but in degree far exceeding that of edge runners, the sides of the casing are formed as open wire sieves of the degree of fineness required, and a series of propelling blades attached to and revolving with the central shaft drive the material under treatment through the sieves as it is pulverised; by this arrangement the degree of fineness can with certainty be arrived at from coarse to extreme fine, and that with uniformity.

Intending purchasers can at all times satisfy themselves by sending the material they wish to operate on, and seeing it pulverised. Over 300 in use. Prices and testimonials free on application.

RICHARD COOK & CO., ENGINEERS, SHEFFIELD.

SAX'S ELECTRIC SIGNAL BELLS,

AND OTHER TELEGRAPHIC APPARATUS FOR MINES, &c.



Prize Medal - - - London, 1862.
First Prize - - - Sydney, 1879.
Prize Medal - - - Melbourne, 1881.

PRICE LIST POST FREE, ON APPLICATION.

JULIUS SAX (ESTD. 1850), 108, GREAT RUSSELL STREET, LONDON, W.C.

MANCHESTER WIRE WORKS.

NEAR VICTORIA STATION, MANCHESTER.

(ESTABLISHED 1790).

JOHN STANIAR AND CO.,

Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for
LEAD AND COPPER MINES.

Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper

EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES

Shipping Orders Executed with the Greatest Dispatch

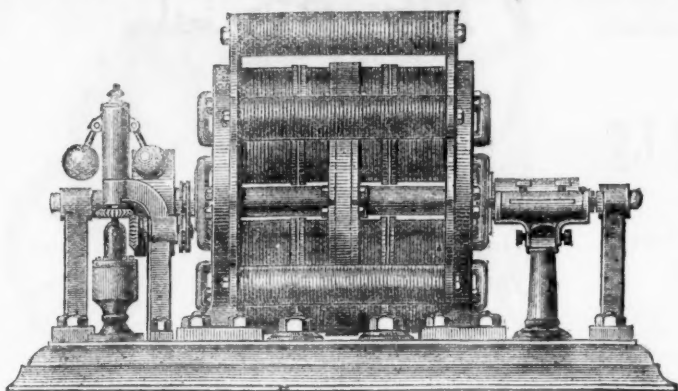
THE DYNAMO-ELECTRIC MACHINE SUPERSEDES EVERY KNOWN BATTERY.

WILLIAM ELMORE,

91, BLACKFRIARS ROAD, LONDON, S.E.

NO OTHER ADDRESS.

PRICES AND
PARTICULARS
GIVEN ON
APPLICATION.



NO AGENTS.

ALL APPLICATIONS
SHOULD STATE
THE PURPOSE
FOR WHICH THE
MACHINE IS REQUIRED.

The "Elmore" Patent Dynamo-Electric Machine,

FOR DEPOSITING

NICKEL, SILVER, BRASS, BRONZE, COPPER, ETC., AND FOR ELECTROTYPING.

REPEATED COMPARATIVE TRIALS have proved that this is the MOST POWERFUL MACHINE IN THE MARKET, that it NEVER REVERSES CURRENT, and that it is very easily worked without special knowledge.

COMPLETE OUTFITS OR MATERIALS FOR NICKEL-PLATING, SILVER-PLATING, ELECTROTYPING, TINNING, BRONZING, &c.

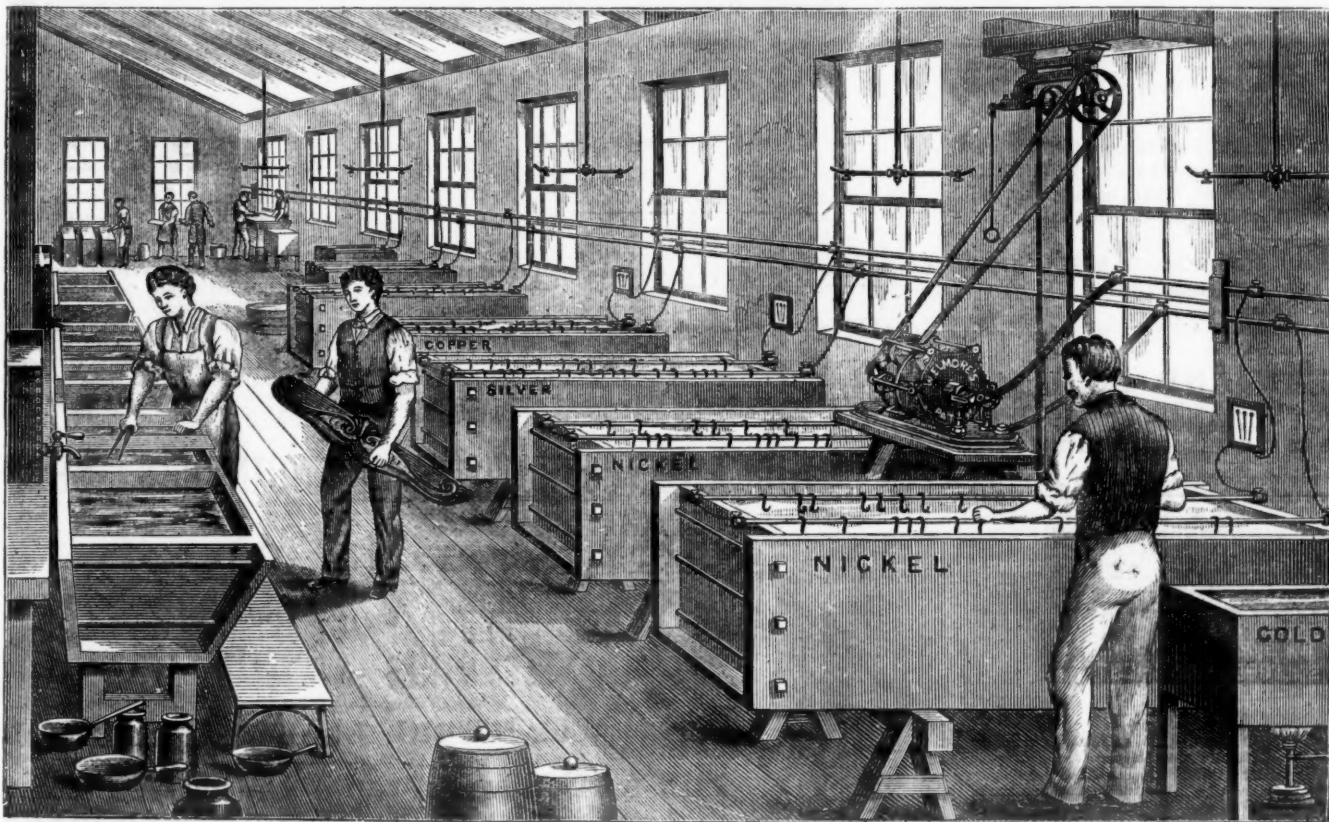
TO TIN-PLATE MANUFACTURERS AND GALVANIZERS.

The attention of TIN-PLATE MANUFACTURERS AND GALVANIZERS is respectfully directed to the NEW PROCESSES of manufacturing Tin-Plates by depositing the Metal by the current of an "ELMORE'S PATENT" DYNAMO-ELECTRIC MACHINE through aqueous solutions in contradistinction to the old processes of dipping in molten metal.

THE ELECTRO DEPOSITED METAL IS PERFECTLY REGULAR IN character, and the electric current may be so EASILY CONTROLLED as to coat with a MERE FILM OF METAL, OR A DEPOSIT OF ANY DESIRED THICKNESS. The great economy in the cost of plant and cost of production will be immediately self-evident. As nearly the whole of the existing plant can be used in the new process, the cost of altering the system will be comparatively trifling.

DYNAMO-ELECTRIC MACHINES

SPECIALLY CONSTRUCTED FOR DEPOSITING ANY METAL IN ANY QUANTITY.



The above represents an Electro-plating Works, in which an "ELMORE" PATENT DYNAMO-ELECTRIC MACHINE is being used for the deposition of Nickel, Silver, Copper, Bronze, Brass, Gold, Tin, Zinc, &c., from their Solutions.

From "INDUSTRY."

"By means of the dynamo-electric machine of Mr. William Elmore, the perfection of nickel-plating is obtained. Dynamo-electricity—that is, electricity produced by motive power—presents advantages which cannot be claimed by any galvanic battery known. Not only is the current produced at a far less cost, but it can be so regulated or controlled that the smallest article can be separately coated by a dynamo-electric machine, capable (in its full application) of depositing from 25 lbs. to 30 lbs. of silver per hour. It is a remarkable fact, moreover, that metals can be deposited from their solutions by dynamo-electricity in less than one-third of the time occupied by the ordinary battery in producing the same result. The quality of the deposit, in regard to its smoothness and regularity of character, is greatly in favour of dynamo-electricity.

"Having had considerable experience in dynamo-electric machines, Mr. W. Elmore has been careful to note the defects and irregularities which some of the less skilfully constructed machines have presented, and thus he has been enabled to produce a really practical and effective machine, of great power, which may be thoroughly depended upon as being capable of giving the most satisfactory results for all purposes of electro-deposition, including gilding, silvering, bracing, nickeling, and electrotyping.

"The advantages of dynamo-electricity in the important art of electrotyping are beyond estimation. When it is known that a fine, clear, deposit (or 'shell') of copper, 800 ft. square feet, can be obtained by a dynamo-machine in less than three hours, without 'pin-holes,' and other defects common to battery deposits, it will be at once seen that the ordinary battery is effectually and unmistakably superseded.

"One of the most useful purposes to which dynamo-electricity can be applied is the production of chemically pure nickel solutions, and salts of nickel, for the electro-deposition of the metal. The vast amount of elec-

tricity generated in a dynamo-machine enables one to dissolve nickel and other metals in their own solvents, far more economically, and in greater purity than by the ordinary method of treating metals. Electrical power obtained by the ordinary galvanic battery would be far too expensive for this purpose. The solutions formed by the aid of dynamo-electricity are not only purely and economically made; but they can be produced in far less time, and with comparatively little trouble and attention. To Mr. Elmore is due the honour of having introduced into this country the process of making pure nickel solutions and salts by means of dynamo-electricity. The boon he has thus conferred upon a large industrial class we need not dilate upon."

From "THE IRONMONGER."

"A still further improvement in the deposition of metals has been recently obtained by the introduction of the dynamo-electric machine of Mr. Wm. Elmore, which is in reality electricity produced by motive power. By this means the current is obtained at a much less cost, and I have seen it regulated to such a nicety that the smallest article could be separately coated in a full-sized vat. The deposit is also effected in about one-third of the time taken by a galvanic battery, and for smoothness and regularity of surface is greatly in favour of the dynamo process, which may be known from the fact that all Mr. Elmore's competitors, both in London and elsewhere, are fast adopting his machine in preference to the old process. He has, in addition, supplied it to many large firms throughout the country for electrotyping purposes, and the reports received from them are gratifying to the inventor. Mr. Elmore is also the author of an interesting little work on the subject, which may be read with interest by those who contemplate entering into what is fast becoming an important industry."

WILLIAM ELMORE, 91, BLACKFRIARS ROAD, LONDON, S.E.

DYNAMO-ELECTRIC MACHINES FOR ELECTRIC LIGHTING.

DYNAMO-ELECTRIC MACHINES FOR DEPOSITING ANY METAL IN ANY QUANTITY.

DYNAMO-ELECTRIC MACHINES SPECIALLY CONSTRUCTED FOR DECOMPOSITION.

THE GRAND PRIZE, THE TRIPLE AWARD.

Gold Medal, Silver Medal, and Honourable Mention awarded at the Paris Exhibition, in competition with all the World,
FOR MY LATEST PATENTED STONE BREAKERS AND ORE CRUSHERS.

HIGHEST AWARDS
FROM THE
MINING INSTITUTE
OF CORNWALL.

H. R. MARSDEN,

ORIGINAL PATENTEE AND SOLE MAKER OF **BLAKE-MARSDEN**

PULVERISERS,
BONE MILLS
MORTAR MILLS
&c. &c.

Improved Patent Stone Breakers & Ore Crushers.

New Patent Reversible Jaws,
in Sections with Patent
Faced Backs.

NEW PATENT ADJUSTABLE
TOGGLES.

OVER **2750** IN USE.

NEW PATENT WROUGHT-IRON CONNECTING
ROD.

New Patent Draw-back
Motion.

NEW PATENT STEEL TOGGLE BEARINGS.

60

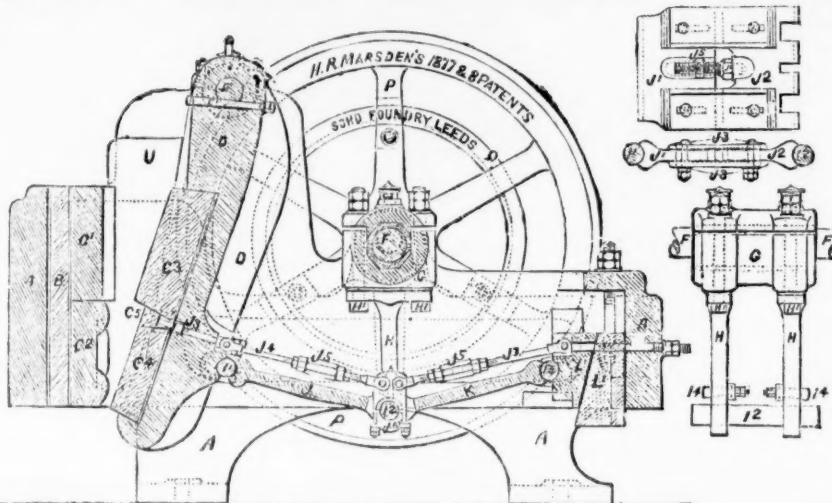
PRIZE MEDALS.

ALL BEARINGS are renewable, and made of H.R.M.'s Patent Compound **ANTIFRICTION METAL.**

CATALOGUES, TESTIMONIALS, &c.

H. R. MARSDEN, SOHO FOUNDRY, LEEDS.

Patentee of the New Patent Special Fine Crusher, for reducing Gold Quartz, Lead Ore, and all kinds of Materials to an impalpable powder. Awarded the **FIRST SILVER MEDAL** by the Cornwall Mining Institute. Particulars of results, &c., on application.



8, Queen-street-place, London, E.C.
DEAR SIR,—We have adopted your Stone Breakers at many of the mines under our management, and are pleased to be able to state that they have in all cases given the greatest satisfaction.

We are, yours faithfully,
JOHN TAYLOR AND SONS,
H. R. Marsden, Esq.,
Soho Foundry, Meadow-lane, Leeds.

St. John del Rey Mining Company (Limited).
A SAVING OF FIFTY-FIVE HANDS BY THE USE OF ONE MEDIUM-SIZED MACHINE.

BLAKE'S STONE BREAKER.—Statement made by the Managing Director of the St. John del Rey Mining Company, Mr. John Hockin, with regard to six months' practical working of Blake's Stone Breaker, affording facility for judging of the relative economy of machine and hand labour in this kind of work, and also of the cost of getting the Stone Breaker to work in difficult places. The price paid to Mr. Marsden for the machine referred to by Mr. Hockin was £180, and adding to this the cost of engine, carriage, and fixing, the aggregate cost to the company of the Breaker in working order was £500. By this outlay the company is enabled to dispense with the labour of 55 people, the value of which is £500 per annum. The cost of working the machine could not be more than the wages of about five men (the machine requires but one man to feed it, so that the rest would be for engineer, fuel, oil, &c.), and allowing for interest on outlay and for renewal when necessary, the saving must be enormous.—*Mining Journal.*

JOHN CAMERON'S

FLY-WHEELS ON BOTH SIDES.

SPECIALITIES ARE HIS

STEAM PUMPS

FOR

COLLIERY PURPOSES,

Specially adapted for forcing Water any height;

ALSO, FOR

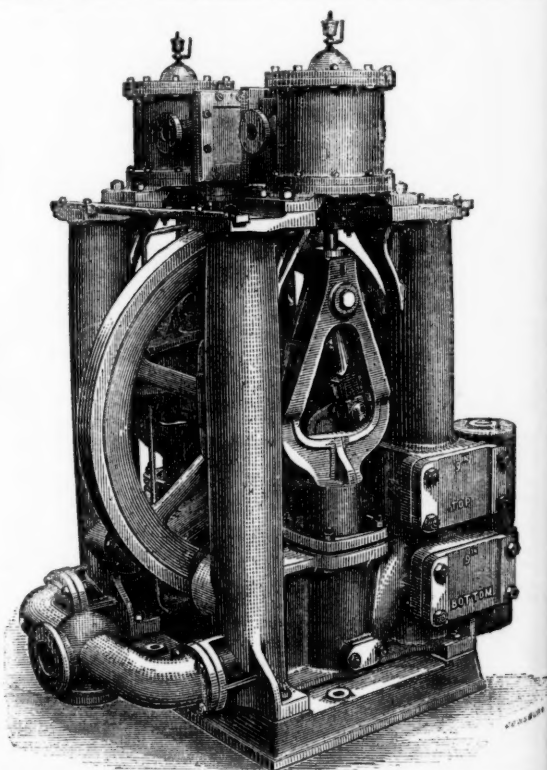
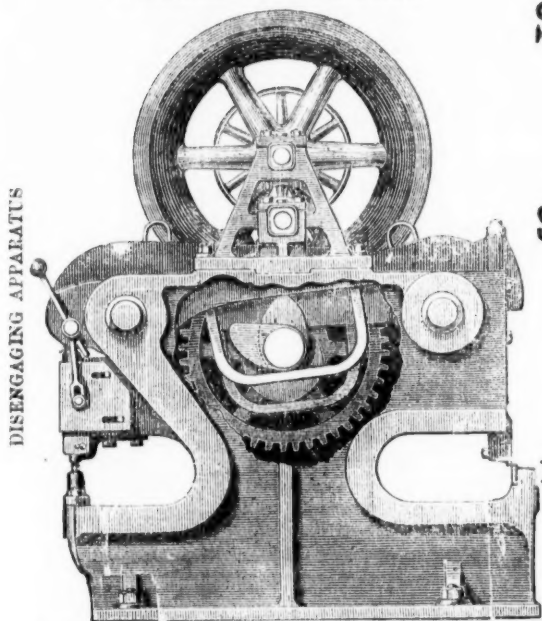
**SINKING, FEEDING BOILERS AND STEAM
FIRE ENGINES,**

Of which he has made over 8000.

ALSO, HIS

**PATENT CAM AND LEVER
PUNCHING AND SHEARING MACHINES.**

Works: Oldfield Road, Salford,
Manchester.



HULME & LUND'S SPECIALITIES.
DONKEY PUMPS, MINING PUMPS,
HORIZONTAL PUMPS, TAR PUMPS,
AIR COMPRESSORS,
FIRE ENGINES, STEAM ENGINES,
WILBURN IRON WORKS
SALFORD, MANCHESTER.

PROVIDE AGAINST ACCIDENTS!
ACCIDENTS WILL HAPPEN!
A FIXED SUM in case of death by ACCIDENT, and a WEEKLY ALLOWANCE in the event of INJURY, may be secured by a Policy of the RAILWAY PASSENGERS ASSURANCE COMPANY.
The oldest and largest Company, insuring against Accidents of all kinds.
The Right Hon. LORD KINNAIRD, Chairman.
SUBSCRIBED CAPITAL £1,000,000
PAID-UP CAPITAL AND RESERVE £230,000.
MODERATE PREMIUMS.
BONUS ALLOWED TO INSURERS AFTER FIVE YEARS.
£1,630,000
HAS BEEN PAID AS COMPENSATION.
Apply to the Clerks at the Railway Stations, the Local Agents, and West End Office, 8, Grand Hotel Buildings, Charing Cross, or
64, CORNHILL, LONDON.
WILLIAM J. VIAN, Secretary.

Now ready, price 3s., by post 3s. 3d., Sixth Edition; Twentieth Thousand Copy, much improved, and enlarged to nearly 300 pages.
HOPTON'S CONVERSIONS ON MINES, between Father and Son. The additions to the work are near 80 pages of useful information, principally questions and answers, with a view to assist applicants intending to pass an examination as mine managers, together with tables, rules of measurement, and other information on the moving and propelling power of ventilation, a subject which has caused so much controversy.
The following few testimonials, out of hundreds in Mr. Hopton's possession, speak to the value of the work:—
"The book cannot fail to be well received by all connected with collieries."—*Mining Journal.*
"The contents are really valuable to the miners of this country."—*Miners' Conference.*
"Such a work, well understood by miners, would do more to prevent colliery accidents than an army of inspectors."—*Colliery Guardian.*
London: MINING JOURNAL Office, 26 Fleet-street, E.C., and to be had of all booksellers.

THE "CHAMPION" ROCK BORER

MINING AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIAN RUBBER HOSE, TESTED IRON PIPES, &c.

Air-Compressing Machinery,

Simple, strong, and giving most excellent results, and
ELECTRIC BLASTING APPARATUS.

Full particulars of rapid and economical work effected
by this machinery, on application.



R. H. HARRIS, late

ULLATHORNE AND CO., Mechanical and Consulting Engineers,
63, QUEEN VICTORIA STREET, LONDON, E.C.

J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

CRANE, INCLINE, AND PIT CHAINS.

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES, FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions

WELDED STEEL CHAINS FOR CRANES, INCLINES, MINES, &c.,
MADE ALL SIZES.